

**COMBINATION OF TEXTILES, FASHION, AND SCULPTURE FOR  
UNCONVENTIONAL COSTUME MOUNTED ON STATUE**

By

**KNUST**

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of

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## DEDICATION

For their unflinching support throughout this exercise and my general endeavours, I dedicate this project to my better half – Kokailey and our two (2) wonderful daughters – Nana Yaa Ampofoa and Nana Aba Abam.

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## CERTIFICATION

I hereby declare that this submission is my own work towards the MFA and that, to the best of my knowledge, it contains no materials previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

Kenneth Bright Boateng (PG1711007)



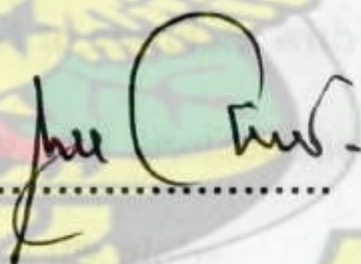
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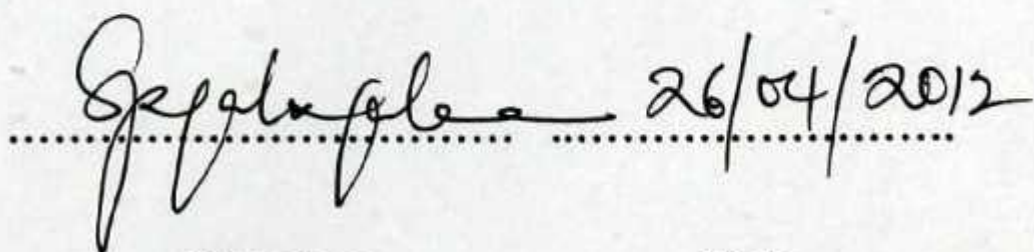
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## ABSTRACT

“Combination of Textiles, Fashion, and Sculpture for Unconventional Costume Mounted on Statue” is an investigation towards the development of common and easily available fibrous materials that can be used as textiles and subsequently convert them into apparel and accessories for the dressing of a monument. This research has been necessitated by the fact that the regular textile fibres appear to have been over-employed, making it monotonous and unexciting for the above purpose. Launching investigation into the subject at stake, qualitative research shall be adopted to aid in establishing outcomes that are credible, valid, and verifiable. In relation to the above, twisted corn husk and dried plantain leaf shall be converted to costume for the dressing of size 12 petite female statue. It is expected that the inquest shall highlight the practicality of unconventional materials for the making of flamboyant costume on a statue displayed at public places. Contextually, the artefact at the centre of the project is to be positioned at the entrance of the reception of La Palm Royal Beach Resort to correlate with the corporate philosophy of the resort as a pleasure hotel. Hopefully, the artefact should be a novelty for the expansion of the discipline of textile art across the globe.

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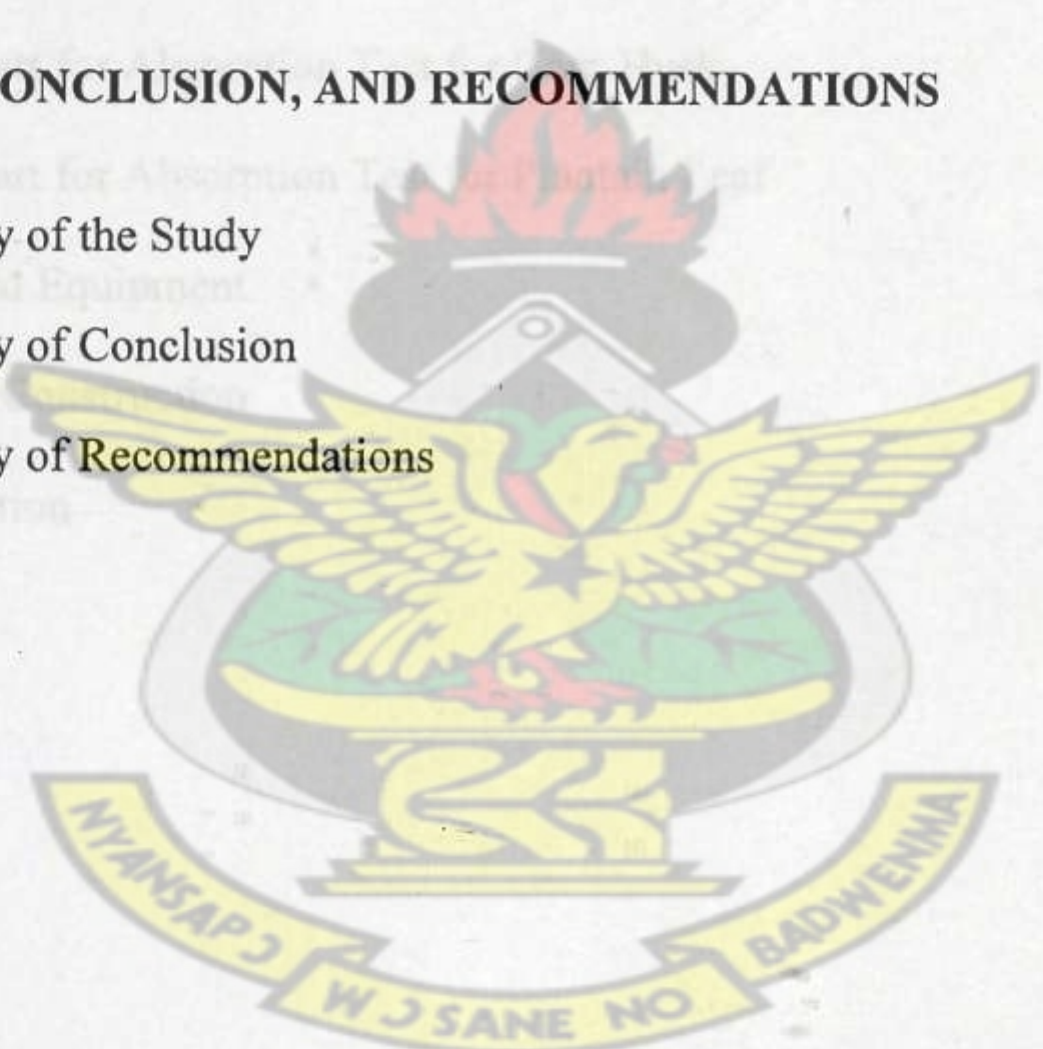
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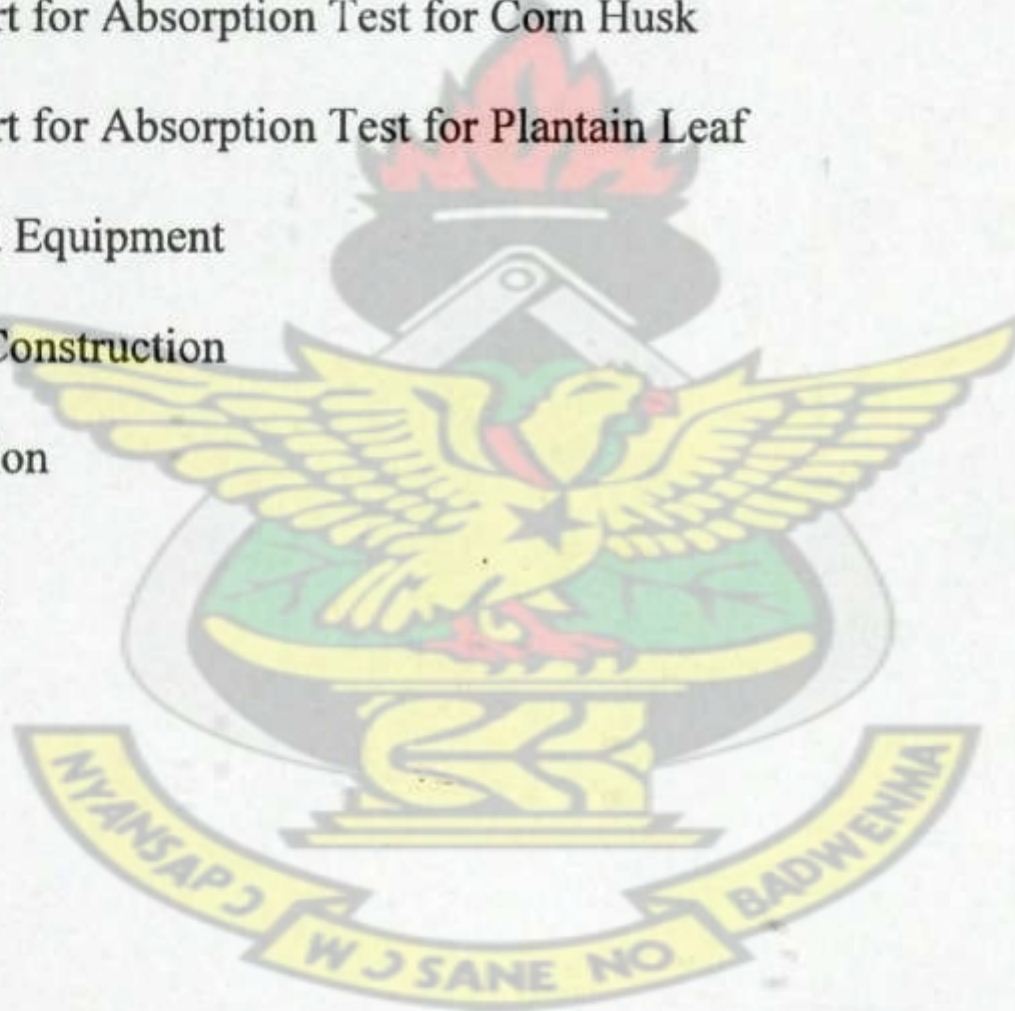
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# CHAPTER ONE

## INTRODUCTION

### 1.0 Background of the Study

One very interesting tradition of life is dressing and the most discerning element of it is clothing. Clothing could be described as a covering designed to be worn on a person's body. By deduction, clothing could be described as the various articles such as apparel, accessories, headdress, and make up that are applied on the body for dressing. Its significance is so dire that the Article 25 of UN Universal Human Right Declaration Charter, (1948), has declared it to be among the basic necessities of life. Over the years, the huge demand for clothing worldwide has led to a sprawling industry that is highly competitive. So keen is the competition that nations like Ghana appear to have been engulfed by the major players exposing the state to the dictates of the market leaders. In the process, the local textile/clothing industry has virtually been grounded and the related challenges are too bare to ignore (Quartey, 2006).

Dominating the challenges are redundancy, over-employment, poor staff welfare, over-exploitation of staff and the environment, dumping, distortion of macro-economic indicators, poverty, just to mention a few. The numerous problems facing the related industries have both internal and external origins. According to the 2012 national budget, GDP of less than 40 billion dollars makes Ghana quite weaker economically when dealing with international players. The limited size of the economy obviously reflects on the nation's financial strength that has direct political bearing. Internally, it is clear that traditional textiles have virtually been cotton that is plain woven as grey baft, some of which are bleached into calico and/or dyed and printed for all sorts of fancy effects for the

market. Of interest is the fact that cotton which used to be nicknamed the king of fibres and controlled over 70% of global fibre production in the 20<sup>th</sup> century is now managing fewer than 30% of it. Many regenerated fibres, synthetics, and blended fibres have yielded high performance textiles at cheaper cost other than cotton. Relating to this, GATT and WTO pact has receded the nation's capacity to control imports thereby exposing it to the excessive pressure of the market forces. Since Ghana resolved to pursue the ISI policy and hooked up to GATT and WTO aiming at following this path in the 1960s, its trade fortunes have been abysmal. Given that in the late 1970s when the textiles/fashion industries began to nose-dive, the rather few types of fabrics and upholstery outside the conventional refined grey baft like jacquard, pile, and knit have been totally grounded. The compelling problems that the industry faces give reasonable cause for the crafting of a unique type of apparel that uses textiles which should be different from the known types and has the attributes to survive in the market. Certainly, the probable innovative ones should be so Ghanaian that its competitive edge over the rivals could help the nation to fairly secure its interests.

Regarding the above, the motive is to extract indigenous natural materials that otherwise might be discounted as waste which are readily available and cheap and then, develop fabrics out of them for the manufacture of ceremonial apparel. However, this type of apparel is to be fitted on cast sculpture piece of woman with a size 14 petite silhouette with an exciting pose for the enhancement of interior and exterior décors of hotel lobbies, halls, auditoriums, and living rooms. For this particular exercise, the artefact is to be placed at the entrance of the reception of La Palm Beach Resort as La Palm is a pleasure hotel. Being a pleasure hotel also commensurate with the passion that the artefact resonates as it is quite erotic. The apparel being a new concept of dress is to clad statue for now pending

further research into the possibility of using such costume for human dressing. Nevertheless, humans could still wear it for clothing which has such materials fashioning as emphasis in aspects of the design. This lies in the fact that prolonged use is restricted unlike normal clothing like casual wear, formal wear, and lingerie. Looking ahead, it is hoped that in the near future, subsequent research into its enhanced peculiar properties as in comfortability, washability, durability, and drapery to aid its comprehensive use by humans without such limitations as stated earlier should be achieved. Actually, the above is composite of the basis for launching the inquest into investigating alternative fibrous materials for textiles and fashion manufacture. It has been structured into six main chapters.

Sculpture as it were had probably been more ancient than textiles and clothing as antiquities of statuettes, statues, monuments, and paintings virtually attest to the fact that the medium of sculpture is one of the main tools for recording cultures, traditions, and events of the past. Art involves stimulating perceptions to appreciate aesthetic values, as such, it should be possible to craft new artefact from the combination of textiles, fashion, and sculpture. Lately, sculpture from Africa is increasingly gaining universal appreciation. Supporting this claim are recent deductions made from interviews conducted with experts and practitioners of the discipline of sculpture in Takoradi. Relating to the above, Ato Keelson of Centre for National Culture at Sekondi in 2010 alluded to the fact that African sculpture used to be associated with fetishism and magic by the West; a perception that has changed and now, viewed for largely artistic appreciation. Keelson went on to claim that this has led to sharp increase in the demand for African sculpture. This was substantiated by Ebo Ocran in 2009 during conversation regarding the subject matter where he underscored that the business is good but for the oscillating peaks. A further probe led him

to say that there is huge local and international interest in the merchandise. The latter are usually tourists and business people from across the world especially Europeans and Americans who appear to have keen interest in the philosophical nature of the African sculpture like – “mother and child” and “kissing lovers” samples of which have been displayed by Plates 1.1(a) and 1.1(b). In a follow-up question as to how come he and most of his colleagues appear impoverished led to the answer that – “we lack the technical skills of marketing; hence, we just do well only at the tourist season and in some cases, during major international activities that attract foreigners like businessmen and tourists”.



**Plates 1.1(a) & 1.1(b) respectively: Some of the on-sale showcased artefacts of Bismark**

Ocran

Source: Field Data, (2009)

The three (3) central pieces of the top shelf [Plate 1.1(a)] and that seen at the bottom left of Plate 1.1(b) are some samples of 'kissing lovers', one of the most demanded artefacts. This has been confirmed by Foli Kumah, the Director of MOTI upon an interview in 2008 likewise Ebo Bentum (Ph.D.) in 2009. Relatively, from CNN archives, excerpts from programmes on interior design showed the display of some African sculpture adopted, Klensch (1996). The then resource person as part of the interview told the host that trend is directing towards the display of African sculpture for interior decoration.

In relation to this, there could be a place for comfort in this aspect of art for the beleaguered local textile industry and thus, the idea of incorporating textiles, fashion, and sculpture as a common artefact for both local and international market. This is the basis of adopting alternative textile fibrous materials as in dried corn husk and plantain leaf for the main fibres in developing fabrics for the making of fanciful monumental outfit to be dressed on female carved statue. It is also hoped that the expected costume to be derived from this research shall be showcased on carved wooden female model of 5ft 4in and of standard size 12 petite silhouette. This artefact has been designed for gracing lobbies, halls, auditoriums, decoration of other public places and living rooms to add glamour and passion. From the findings of the interview, it was noticed that, sculpture is one of the items considered as non-traditional exports that seem to be doing fairly well highlighting its fair competitive advantage. This is also the fundamental cause for this research that has been titled: "**Unconventional Textile Fibrous Materials for Costume Mounted on Statue**". The objective is to make costumes from twisted corn husk and dried plantain leaf for dressing cast silhouette of a woman. The artefact should be of significant admiration and appreciation to draw interest from hoteliers, art collectors, interior designers, beauty enthusiasts, educational institutions, and entrepreneurs.

## 1.1 Statement of the Problem

Cotton is one of the finest fibres that to all intent and purposes, should be the most versatile as well. Being a tropical plant, it does not face hindered propagation in Ghana and as such, it is the dominant fibre for textiles in the country. International research into textile alternatives has generated high performance fabrics that are moderately priced and are now the market leaders. These new derivatives have been so competitive thereby literally crumpling the local cotton industry. In the same vein, the sculpture sector of the broader art industry has not been fairing that badly. On the contrary, it is within one of the merchandise classified as non-traditional exports which have been doing so well over the last decade. This also accounts for the reasons why textile, fashion, and sculpture are being combined to create monumental artefact.

The underlining factors for the Statement of the Problem of this inquest are as follows.

1. The possibility of expanding the textile and fashion disciplines into cheaper and readily available unconventional derivatives extracted from wastes for fanciful apparel manufacture.
2. Limited innovation and creativity in the area of natural *fibre-textile* for *garment* manufacture is a major cause for appalling industrial performance.
3. Diversify textiles, fashion, and sculpture into combined innovative and appreciable artefact for public display.

## 1.2 Objectives of the Study

The specific object of the study is to craft a costume from corn husk and plantain braids and fit on a size female monument for public display. The general objectives of this project are to:

1. Produce textiles and fashion from cheaper and readily available wastes as common but unconventional derivatives for fanciful apparel manufacture.
2. Create and develop fanciful costume through fabrics made from corn husk and plantain leaf that have the capacity to generate competitive economic advantage.
3. Diversify textiles, fashion, and sculpture into combined innovative and appreciable artefact for public display.

## 1.3 Research Questions

From the stated problems, answers to the following questions shall be the benchmarks by which this study shall be conducted.

How possible can cheaper and readily available alternative textile materials extracted from wastes be adopted as fabrics for apparel making?

How can ~~innovative fanciful~~ costume made from corn husk and plantain leaf be transformed into competitive economic advantage?

How can textile, fashion, and sculpture be combined into a common artefact for public display?

#### **1.4 Delimitation of the Study**

The scope of this inquest covers the feasibility of braided corn husk and plantain leaf as textile art. It is expanded to cover fashion and sculpture creating integrated artistic derivative for public display. Research methodology is to be applied to direct the approach of the investigations. The braids will then be subjected to thorough examination to discover effective and efficient use of the braids.

The main costume construction shall be through the combination of twisting and turning of dried corn husk and dried plantain leaf. The apparel shall be manually constructed with tiny and sleek manual needles and cotton sewing thread. Edges of the wrong sides of the costume shall be reinforced with cotton bias binder. The completed costume shall be a type of apparel to be showcased on a size 12 petite female statue.

The research on the customer profile shall largely be based in Takoradi, Kumasi, and Accra Metropolises which are the Administrative capitals of Western, Ashanti, and Greater Accra Regions respectively because of its multi-racial and multi-cultural endowments. La Palm Beach Resort of Accra was chosen for the citing of the presentation because of its apparent advantage. It is in the capital of Ghana and has better proximity to most of the target audience. The model would then be constructed at Kumasi.

#### **1.5 Limitation of the Study**

The research conducted for this project is largely comprehensive yet limited. If the following were done, possibly, the resulted findings and the conclusions could probably create advanced and better innovative costume. The production was largely manual with

marginal use of CAD. Additionally, regrettable though, only one out of the multiple designs that were developed was actually produced. This arose to prevent the research from becoming overly expensive.

## 1.6 Significance of the Study

The major importance of the study has been identified as development of economically viable artefact crafted from cheaply and easily available materials. Additionally, it should make judicious use of waste that could have become a social canker through conversion into art piece. Generate alternative business for the small-scale textiles and fashion business with strong economic base.

## 1.7 Definition of Technical Terms

**Accessories** – Clothing that is worn or carried, but not part of the main outfit of one's dressing.

**Adaptation** – It is a fashion terminology that describes the process of converting garment designs into patterns for seaming and machining. It also involves grading and manipulation of patterns to suit the design to be manufactured.

**Customer Profile** – An analysis (often in graphical form) representing the extent to which fashion client(s) exhibits various characteristics.

**Ergonomics** – Is a terminology in engineering used in tailoring designs according to the holistic uniqueness of client(s).

**Function** – A terminology in fashion that connotes the possible activities that a dressed fellow shall be able to deliver under the facilitation of adorned clothing items. It correlates directly with occasion.

**Grading** – This is a terminology in pattern making for arranging patterns in a graduated series to reflect various sizes relating to the basic.

**Jumble Sale** – A sale of donated articles.

**Occasion** – A terminology in fashion that connotes possible places for which clothing items are adorned like work, church, beach, swim, jog, etc.

**Style** – The formation of basic idea of an artefact that is to be subjected to scrutiny and refinement for the design. It also involves the special attachments of patterns to enhance the peculiarity and features of a design.

**Textile Banks** – Textile banks were facilities for storing and dispensing textile products that were created in both World Wars when virtually all resources were directed into fighting against the German Imperialism. As much as possible, these facilities recycled disposed textile products to reduce unnecessary disposal of wastes.

**Trend** – A general direction in which fashion tends to move.

## 1.8 Abbreviations

**ADP** – Accelerated Development Plan.

**AGOA** – Africa Growth and Opportunity Act.

**ATC** – Agreement on Textile and Clothing.

**ATL** – Akosombo Textile Production.

**BMZ** – German Federal Ministry for Economic Cooperation and Development.

**BOP** – Balance of Payment.

**CAD** – Computer Aided Design.

**CAM** – Computer Aided Manufacture.

**CB** – Centre Back.

**CEPA** – Centre for Economic Policy Analysis.

**CF** – Centre Front.

**CNC** – Computer Numerical Control.

**CNN** – Cable News Network Incorporated.

**COBT** – Chicago Board of Trade.

**CRI** – Crop Research Institute.

**CSRI** – Centre for Scientific and Industrial Research.

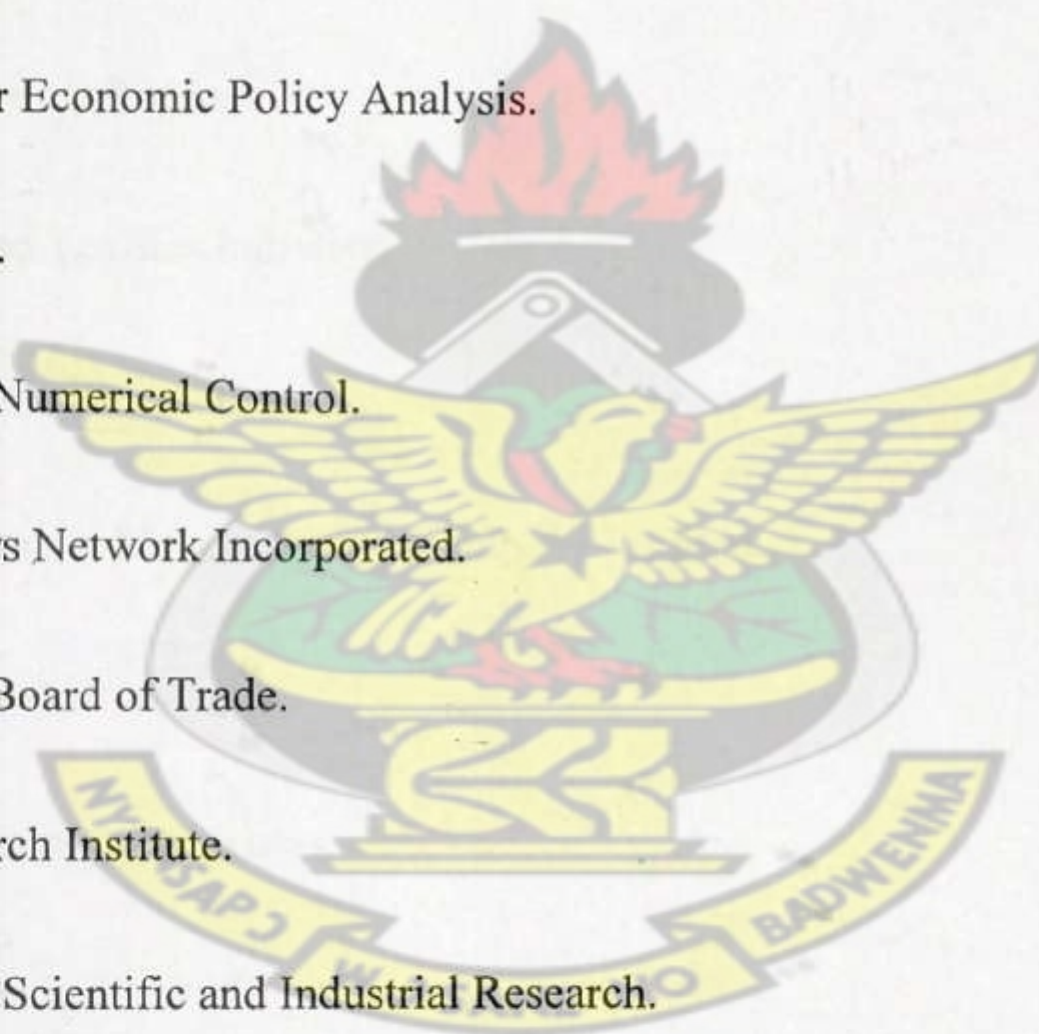
**CTTC** – ~~Clothing Technology and Training Centre.~~

**DOE** – Department of Energy of US.

**EIU** – Economic Intelligence Unit.

**Enlarge REvPar** – Profitable Revenue above Par.

KNUST



**EOS** – Export Orientation Seminars.

**EPA** – Economic Partnership Agreement.

**ERF** – Export Roundtable Fund.

**EU** – European Union.

**F&B** – Food and Beverages.

**FM** – Frequency Modulation.

**GATT** – General Agreement on Trade and Tariff.

**GDP** – Gross Domestic Product.

**GTA** – Garment and Textiles Initiative.

**GTP** – Ghana Textile Production.

**GTMC** – Ghana Textile Manufacturing Company Limited.

**GER** – Ghana Export Roundtable.

**ISI** – Import Substitution Industries.

**JTL** – Juapong Textile Limited.

**KBB** – ~~Kenneth Bright Boateng~~

**KNUST** – Kwame Nkrumah University of Science and Technology.

**MFA** – Multi Fibre Agreement.

**MIS** – Management Information Systems.

**MOFA** – Ministry of Trade and Industry.

**MVA** – Manufacturing Value Added.

**NAFTA** – North America Free Trade Agreement.

**NSF** – National Science Foundation of US.

**Ph. D** – Doctor **POP** – Plaster of Paris.

**SAD** – Swiss Academy for Development.

**TEGLU** – Teachers and Education Workers Union.

**TUC** – Trade Union Congress.

**USDA** – United States Department of Agriculture.

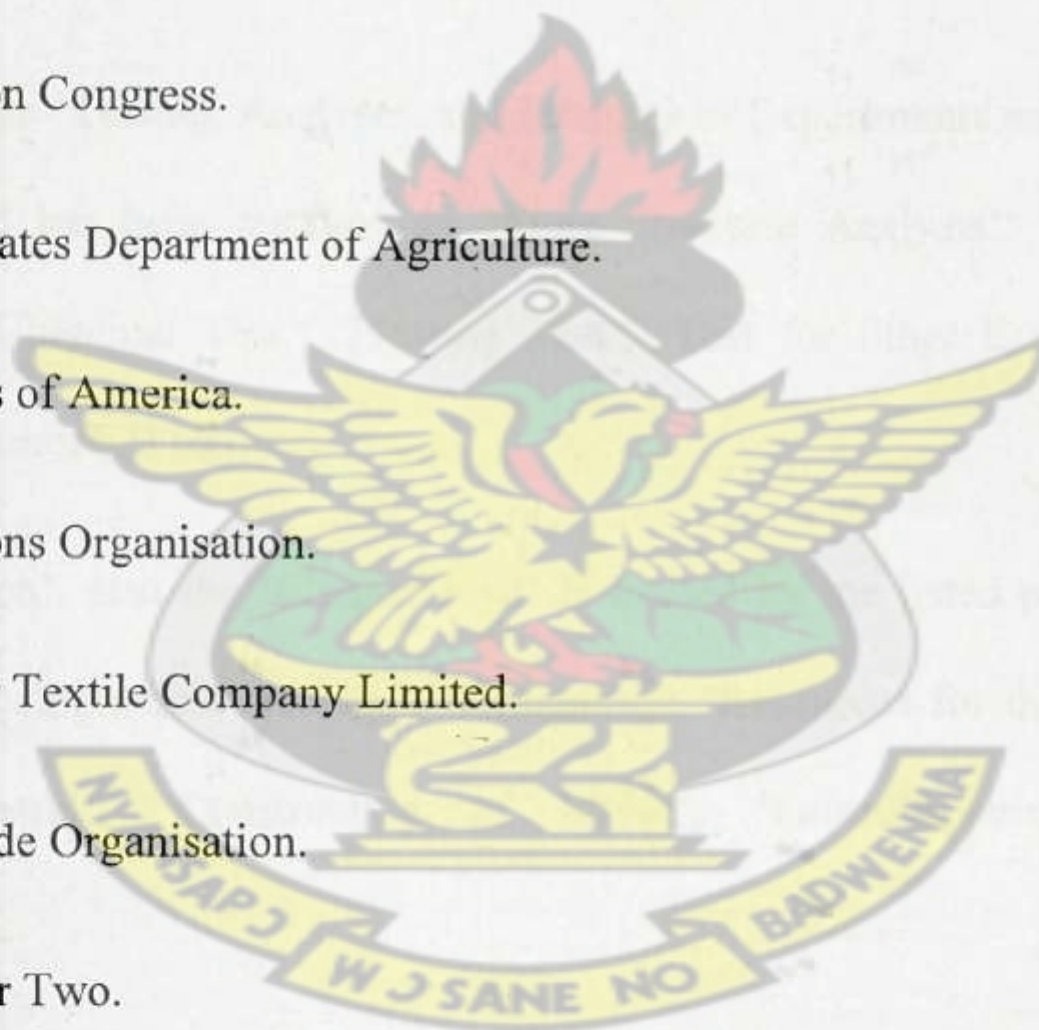
**US** – United States of America.

**UN** – United Nations Organisation.

**VSTC** – Volta Star Textile Company Limited.

**WTO** – World Trade Organisation.

**WW2** – World War Two.



## **1.9 Organisation of the Chapters**

Following the above, the outline for the rest of the study has been arranged according to the provided structure.

The second chapter - 'Review of Related Literature' has the following sub-chapters: 'State of Ghanaian Textile/Fashion Production'; 'Diversity, Innovation, and Efficiency of Textiles and Fashion'; 'Judicious and Productive Use of Waste'; 'Alternative Use for Disposed Textiles and Clothing'; 'Wastes as Unconventional Textile Fibrous Materials'; 'Textile Art as an Alternative in the Broader Textile/Clothing Industry'; 'The Art of Sculpture'; 'Displayed Statue at Public Places'; 'Effects of Weather on Public Monuments'; 'Principles of Fashion Design'; 'Relevant Fibre Tests's.

'Research Methodology' is the 'Chapter Three' presented as: 'Research Design'; 'Population of the Study'; 'Sample Size'; 'Data Collection Instruments'.

'Chapter Four' is the 'Testing, Analyses, and Findings of Experiments with Corn Husk and Plantain Leaf' and has been outlined as: 'Fibre Structure Analysis'; 'Biological Test'; 'Physical Test'; 'Chemical Test'; 'Heating Test'; 'Test for other Essential Properties'; 'Care and Maintenance'; 'Finishing'.

'Artefact Production', also the 'Chapter Five' is treated by the listed pattern: 'Customer Profile'; 'Idea Development Processes'; 'Designing'; 'Resources for the Manufacture of Statue and Apparel'; 'Construction of Statue'; 'Fabric/Apparel Manufacture'; 'Showcasing'.

The 'Chapter Six' is the 'Summary, Conclusion, and Recommendation' and has been organised as: 'Summary of the Study'; Summary of Conclusion,; Summary of Recommendations'.

## CHAPTER TWO

### REVIEW OF RELATED LITERATURE

#### 2.0 State of Ghanaian Textile/Fashion Production

This sub-chapter – ‘State of Ghanaian Textile/Fashion Industry’ essentially attempts to reveal the passive nature of the local textile/clothing sector of the economy establishing the basis for which the adoption of wholly indigenous brand should turn around the abysmal fortunes of the status quo. It has been structured under the listed factors: ‘Evolution of Modern Textile/Fashion Industry’; ‘Current State of the Textile/Fashion Industry’; ‘Future of the Textile/Fashion Industry’.

##### 2.0.0 Evolution of Modern Textile/Fashion Industry

According to Buah (1998), through a record breaking independence from imperialism in 1957, a new country was born and named Ghana with significant prospects of high economic advancement. Engulfed by overwhelming illiteracy, limited infrastructure, limited skilled labour, limited industries, among others, Ghana was braced with battle for survival. The then regime of Kwame Nkrumah launched the ADP and ISI respectively to raise significant skilled human resources through education within the shortest possible time for the imminent industrialization likewise initiating the Evolution of Modern Textile and Fashion Industry.

In reference to an interview with Nene Keteku III of Kpetoe Agotime in the Volta Region in 2008, textiles and clothing had been ancient domestic arts before the nation was colonized. Among the known textile derivatives were the ‘*kyenkyen*’ and then, the famous

kente, 'kete', 'adanudo', and 'fugu' fabrics. Costumes made from these fabrics were various forms of tunic as seen in 'fugu', 'buba', 'kaba', 'dzakoto', 'ntama', and 'amonsee' (T-bandage) as asserted by Mary Leward, an octogenarian 1993 through conversation. The coming of Europeans did also introduce their arts and technologies by which the nation got fairly indoctrinated into production of those artefacts among which were textiles and clothing. The euphoria associated with the acceptance and total embrace of industrial technologies and expertise of the imperialists were not in doubt for one reason – they were more endowed and advanced in industrial capacities. The massive imports for virtually all textile and apparel needs of the state gave way for rapid industrialization in the 1960s and 1970s, (Buah 1998). It was also around the same period that textiles and garments were considered and taught in the formal educational system to train skilled labour. So clearly, it appears trained expertise for the making of professional clothes in particular as introduced into the country by the Europeans earlier was through on-the-job-training (apprenticeship); a practice that still abides today. It did not emerge as surprise when the discipline of dressmaking was scornfully and disdainfully treated as the practitioners in the field were perceived to be inferior to those of the 'white-coloured' jobs. Unfortunately, this ignorance continually stands within the country largely even though fashion has seen tremendous progress in recent times.

The study of textiles on the contrary gained tremendous boost when it was introduced at KNUST as a full time programme leading to the award of Bachelor's Degree for the raising of managerial staff. To complement this, Intermediate and Advanced Textiles were introduced at TTI for the training of technicians as factory hands for the burgeoning textile industry. It was just a matter of time that dressmaking developed into quite an expansive and in the wisdom of the then regime of Dr. Nkrumah, large scale fashion houses were

established by the state to complement the clothing being manufactured by the small and medium scale enterprises; a claim that is supported by Adisi (1998) who was offering orientation to students on internship at GTMC. After Takoradi Polytechnic, formal training in fashion began to spread across technical institutes within the state: TTI and the subsequent polytechnics in Accra, Ho, and Kumasi. In sum, the interdependence of the textile and garment was to maximize the advantage for optimizing the sweeping capital injected into the main textile sector for Ghanaians. Coupled with strategic formal education, integrated industrial approach and direct state investment, the textile-garment sector had a comfortable start-up in the 1960s. The integrated industrial approach adopted in this sector saw the conscious establishment of textile, clothes, and haberdashery manufacturing plants. Of interest is the location where these corporations were cited. Spintex (now Printex) was located virtually opposite to the Haberdashery Manufacturing Corporation at the Spintex Road in Accra. These were about 20km away from the other major textile and then garment manufacturing factories in Industrial Area of Accra and Tema. Apparently, the synergy from the coordinated businesses was not in doubt.

The initial successes of the sector industry waned deeply when general industry in Ghana suffered major jolts in the late 1970s to the early 1980s and thus, drastic recovery measures which included comprehensive educational reforms were enacted in 2006 academic year, MOE (2005). As part of the educational reforms, fashion saw its greatest revolution yet when clothing was separated from home economics leading to the establishment of HND Fashion Design – a programme that has been running in five Polytechnics – Takoradi, Accra, Ho, Kumasi, and Cape Coast since 1994. At present, Radford University, an American private university is running full time BA programme in fashion whiles some of the polytechnics are running B-TECH Fashion as complementary to the HND.

Clearly, the aggregated effects from the educational reforms supported by the ultimate benefits of the decade old SAP and ERP fairly resuscitated the industry for in reference to Quartey (2006), it lifted its dwindling fortunes that had sunk as low as 46 million yards per year in the 1980s to 65 million yards per year for textiles. As for fashion, the tale of its revival received icing on the cake when the phenomenal Kofi Ansah burst onto the scene. A discipline em-battered with stereotypes and perceived as the domain for school drop-outs and less intelligent females for the first time saw the university trained and flamboyant man bearing the torch in the early 1990s. From his Industrial Attachment Report, Gyedu (2008), stated that the overwhelming success that he won led to the collaboration with GTP to launch the Woodin brand. His impact also attracted other well educated renowned personalities like St. Osei of blessed memory, Joyce Ababio, and Adzedu of shapes into the fashion industry. Shortly, the stigma and shame associated with the study and practice of female dominated fashion began to change for the better. All the more, the introduction of the PSI on textiles by the then Government added extra prospects to the textile and fashion sub-sector. Nonetheless, as put by Osei Ntiri in 2009 during a class discussion, the new illuminating prospects round tripped in 2005 when textile and clothing sectors saw unhindered control through the comprehensive trade liberalization as espoused by WTO. Sadly, the performances of both the textile and garment sectors have been very bleak ever since and respite does not seem to be on the table for now.

Probably the most assertive of the textile and the garment industries was the textile segment. Revolution of the sub-sector – textiles of general industry in the new Ghana must have been so robust that within barely fifteen years, it employed whopping 25,000 staff representing 27% of the entire work force of the country, (Quartey, 2006). The writer further stressed that, the "total industrial output peaked at 129 million yards in 1977 with a

capacity utilization rate of about 60%". The market leader then – GTP maintained the lead in the industry and collaborating with its partner JTL could produce annual output of 30.7 million yards. Following them quite closely was GTMC, ATL, and Printex that have production levels of 15 million, 13 million, and 6 million yards respectively. The honeymoon began to dissipate rapidly for (Quartey, 2006), established that by 1995, the massive 129 million yards supplying a population under 8 million had nose-dived steeply by 64% to 46 million yards only to recover marginally to 65 million yards in 2005 for a whooping population of 22 million people. As at March 2005; GTP was producing 9 million yards; ATL 18 million yards; GTMC 2.24 million yards and Printex 9.84 million yards annually. A total annual output of 39.04 million yards was produced by the industry as at March 2005, which translates to an average of 49.4% of initially installed capacity of the four firms.

The garment industry had some 138 medium and large-scale garment manufacturing companies as well [Size categories: small-scale (5-29 employees), medium-scale (30-99 employees), large-scale employees (100 or more people)], (Quartey, 2006). However, intense competition, incessant political upheavals, erratic change in governments, premature truncation of political administration and directions likewise inconsistent government policies over the years compounded greatly the obvious threat from the WTO pact. It should also be pointed out that, alternative cost from the above listed challenges was the inability of the nation to upgrade its capacities in technology, human resources, and diversifications. Osei Ntiri further disclosed that whiles Ghana was slumbering, the already well-endowed nations like the Europeans, South-East Asians and even Latin Americans were assiduously working to better their lot through the Breton Woods institutions, GATT, WTO and recently, AGOA and the EPA.

The huge advantage and the mouth-watering potentials of Ghana all faded off without notice. As of 2002, the four (4) major companies that survived the turbulence of decline in the sub-sector were GTMC, ATL, GTP, and Printex (which used to be Spintex that had collapsed earlier) with GTP maintaining the market leadership in the country. Making it even more precarious is the fact that the garment sub-sector whose performance is not any better attracts very low foreign direct investments. Further in the publication, Quartey (2006), maintains that investments within the textile industry are mainly by local firms. It continued that a survey of forty textile and garment industries within Accra and Tema revealed that only 5% were involved in joint ventures with foreign investors. The rest (95%) were locally owned and none was solely foreign owned. A major weakness of the garment subsector is the poor remuneration and low morale of the staff. In a survey conducted by the researcher in 2005, it was deduced that factory hands were paid as low as GH¢20.00, that is barely US\$16.00 per month by Belin Textile Ltd. There was no labour union and the Mauritian owners treated the indigenous workers contemptuously.

### ***2.0.1 Current State of the Textile/Fashion Industry***

Currently, the state of the textile/fashion industry paints a rather gloomy outlook as the future does not appear that promising. Ideally, the membership of Ghana in GATT and WTO was for good reasons as it aided the economy to attract foreign direct investment likewise open prospective markets for the country to exploit. As revealed by Ntiri in 2009, the immediate benefits from Ghana's membership in GATT were phenomenal as the Multi-Lateral Protocols like MFA aided in advancing the ISI policy of the state. Per the dictates of these Multi-Lateral Protocols, it is required of the nation to stay competitive

aggressively so that its domestic and external market interests could be secured while exploring to acquire new markets. Unfortunately, as put by Buah (1998), during the latter part of the past century (late 1970s and the 1980s) where aggressive developments were the order of the day, Ghana was still grappling with political and civil unrest until the last decade of that century. Educational and research institutions became so dormant that by the time the nation realized, it had been outpaced and outclassed by its immediate rivals like South Korea and Malaysia in technology, efficiency, and productivity. The robust and sustained development by many nations that had rectified the multi-lateral trade pacts (including 1<sup>st</sup> World and 2<sup>nd</sup> World States) also reduced their production cost tremendously. Osei Ntiri in 2009 intimated, it was not too long that the blossom prospects of Africa's beacon of hope (Ghana) began to dwindle rapidly. According to Yeboah during an A-Level lecture in 1994, the average industry was operating at below 20% capacity. The already beleaguered textile sector was partially stable because of the quota regime employed by the WTO that emerged from GATT. To add insult to injury, all moratoriums on quotas and protectionism were lifted in 2005 and since then, the outlook of the wobbling textile sub-sector has been gloomier.

For the textile sector, the initiative of Kofi Ansah got additional impetus when the new administration under NPP attempted to move the industrialization of the country to a new pedestal through the President Special Initiatives from the Golden Age of Business Policy. In 2009, Foli Kumah the director of MOTI in Western Region citing from other reports of the Ministry established that the objective for the PSI on textiles was to actively support, facilitate, and accelerate the development of the garments and textile industry to become a lead export sector and a primary source of employment generation in Ghana. It was essentially designed to build a new and internationally competitive garment manufacturing

and export industry in Ghana. Its primary target was to take advantage of the significant opportunities created under AGOA through the duty free and quota free access to the \$70 billion US clothing and apparel market as well as the EU-ACP Accord for the European market. It was projected to generate in excess of 70,000 jobs in four year period; and a strategy to address the problem of urban and peri-urban poverty and unemployment.

The conceptual framework of the PSI was mandated to implement a three-tier strategy:

- I. Target and attract a selected number of garments and textiles manufacturing firms at overseas to relocate/locate their manufacturing plants and produce from Ghana for the export market.
- II. Identify and assist a selected number of Ghanaian medium scale enterprises to manufacture textiles and garments for the export market.
- III. Identify and support capable individual entrepreneurs to become merchant exporters of garments and textiles who would work aggressively with a critical mass of small-scale producers through sub-contracting arrangements and then export their products to the US and EU markets.

Unfortunately for the country, the implementation was patchy as many of the convenient decisions were executed but not the ones requiring hard choices like finance and welfare.

By the year 2006, the PSI was already crumbling just under four years after its initiation. It is believed that one of its major challenges was the comprehensive abolishment of the quota regime by the WTO which originated from GATT as indicated by Osei Ntiri in 2009. GATT was one of the key international protocols that brought nations together to promote coordination and cooperation after WW2 through trade. Worsening the problems

of the PSI from the sprawling liberalization was the fact that conditions for the proposed credit designed for corporate financing was so complex that the average business never qualified for its accessibility. Adding to its bane was unwarranted political interferences where efficiency and productivity were substituted for ineptitude, nepotism, and cronyism. Making it even more unstable was sickening labour relations and welfare. As if the above is not enough, Quartey (2006), points out that locally, inconsistent policy direction and the scourge of smuggling all the more made the vulnerable industry weaker. On Tuesday, July 30, 2009, it was announced in the Major News Bulletin by Joy FM, (2009), that the prevailing textile market leader – ATL was heavily producing under capacity. A company that used to produce round the clock about four decades ago is now producing half day with engagement of three to five days in a week.

In a related incident, CEPA (2009), an economic policy Think Tank underscores the fact that Ghana's overall BOP has deteriorated sharply between 2004 and 2009, plunging into a huge deficit of US\$940.8 million – equivalent of 5.8% of GDP in 2008. According to the report by CEPA (2009), Ghana has continued to face protracted deficit in trade and current account in her BOP persistently; a trend that deteriorated sharply in 2008. The country's imports amounted to US\$10,261 million at the end of 2008 compared to US\$8,069.2 million in 2007 with almost 33% increase in non-oil component, (CEPA, 2009). This is where all stakeholders of the textile/fashion sub-sector should feel sharp chill down the spine for it is obvious: textile/fashion imports should command tremendous volume of the stated 33% imports traded into the country there by worsening the frailty of the already beleaguered industry. With the odds turning against indigenous manufacturing and exports, it makes sense to reason outside the box hence, the consideration of the dried corn shacks (husks) and the plantain leaf as substitutes in making fantastic costumes as in textile art.

Certainly, this should be an artistic novelty designed to create a space amidst the congested industry.

### ***2.0.2 Future of the Textile/Fashion Industry***

In the wake of the furore over the local interest in the production of the state sponsored basic school uniform, it evolved from Joy FM (2009), that ATL (the local textile market leader) is now producing under capacity utilizing between three and five working days a week. Earlier, Quartey (2006), is referred to have noted that at its peak in the 1970s, the total number of textile firms in Ghana was twenty-nine employing 25,000 labour force representing 27% of the total manpower of the country and operated about 60% capacity. Now, only three have survived with trends of the times painting a very gloomy picture about the future. For now, VSTC and GTMC are in passive operation corroborating the extent of shrinkage facing the entire industry. The industrial butterfly is not limited to textiles alone as the fashion industry is also quivering.

According to Quartey (2006), there used to be one hundred and thirty eight large to medium scale manufacturing plants for garments. In an interview, E. R. K. Appiah (Head of Department, Fashion Design – Takoradi Polytechnic) in 2008 is quoted to have noted that, currently, the two major industries that initiated the PSI on garment have been dissolved under four years of its inception. Quartey (2006), further contends that a recent survey of textile and garment firms in Accra-Tema indicated that firms have cut down significantly on output; in fact, more than half (about 75 percent) of textile and garment manufacturers answered in the affirmative: that, output has fallen.

The textile industry has suffered and continues to suffer unjustifiably from unbridled importation of all manner of textile and garment products, some through dubious means with questionable origin and quality. These products have flooded the local market and have led to the collapse of many local textile industries. The MOTI of the Republic of Ghana in its November, 2002 report established that at its peak in 1975, collective industrial output of textiles was 129 million yards and that dwindled to 46 million yards and rose marginally to 65 million yards in 1995 and 2000 respectively as illustrated by Table 1.

Table 1: Employment within Textile Industry

Years	1975	1995	2000
<b>Output (million yards)</b>	129	46	65
<b>Employment</b>	25000	7000	5000

Source: Quartey (2006)

In all of these, the irony is, population was increasing and invariably, so was demand. It is against this threat that the Textile Garments and Leather Employees Union (TGLEU) was established as a national union outside the Trade Union Congress (TUC) in 1993, Erdtex (2007), quoting from "Textile and Clothing Industry in Sub-Saharan Africa (Friedrich-Ebert-Stiftung 143)". Following their institution, several attempts have been made by TGLEU to save the textile industry from total collapse. In the Erdtex (2007), publication, one of such attempts was in the form of a letter sent by the union to parliament reiterating their grievances. Other attempts by the union to save the textile industry include:

- I. In 1994, TGLEU appealed to parliament to introduce a legislation abolishing the 12½% sales tax on locally manufactured African prints to end unfair competition with similar imported goods.
- II. Sensitisation of the civil society through the print and electric media.
- III. Organised labour within the national tripartite dialogue presented a proposal to the Government in the 2006 budget to focus on TGLEU.

Although the Government of Ghana has responded to calls from organised labour to save the textile industry, these have not been really supportive; it appears just cosmetic. Some of the reactions extracted from news items on <http://www.ghanaweb.com> (2005), include:

- I. The National Tripartite Committee, including organised labour presented a proposal to the Government to be incorporated into the 2006 budget. The proposal was not incorporated but instead, the Government focused its attention on AGOA.
- II. Kufuor (2005), in his May Day speech stated that Ghana cannot subsidize the textiles companies as in the case of Nigeria, because the country does not have resources to do so. It is speculated that some people in government are benefiting from the textile imports; similar to the related experiences in rice and detergent importation.
- III. The Government suggested that political party cloths and Friday wear to offices should be manufactured in Ghana. Although many people have heeded to the call, the paradox is, increasingly many of these special cloths worn on Fridays are becoming imitated fabrics printed in China before being exported to Ghana. In some cases, even the entire outfit is made in China and then exported subsequently to Ghana.

Thankfully upon the assumption of office by the new regime of John Evans Atta Mills, at least, the fulfilment of one campaign promise of providing uniforms is reassuring based on the fact that the entire costumes are to be manufactured within: both textiles and apparel.

TGLEU believes that in order to save the textile and garments industry from virtual collapse, the Government has to rethink its policies. Firstly, importers could be given a quota or pay higher tariffs to create a level playing field or promote healthy "Textile and Clothing Industry in Sub-Saharan Africa", (Erdtex, 2007). Secondly, the Government should encourage Ghanaians to order their mourning cloths from the local textile industries. It is a known fact that Ghanaians have maintained the culture of using mourning clothes and that may save the textile industry from eventual collapse. Finally, it is also recommended that state institutions, religious bodies, schools/colleges, and the private sector should be encouraged to order their domestic, ceremonial, and anniversary cloths from the local textile industries. However, as explained by Osei Ntiri in 2009, the discretionary limitation of moral suasion makes the recommendations quite unachievable. Concluding the subject on the "Future of the Fashion/Textile Industry", Quartey (2006), painted a rather disturbing outlook. Nearly two decades after independence, the textile sub-sector was the major key player in Ghana's industrial sector, contributing significantly to employment and growth in the economy but has dissipated now.

In this regard, recent proposal by Government to establish an Economic Intelligence Unit (EIU) to arrest and punish those engaged in trade malpractices is timely, Joy FM (2008).

The penalty for those caught engaging in these malpractices should be severe enough to serve as a deterrent to other perpetrators of the crime. Secondly, the Unit should be down to business and effectively managed; otherwise, arresting the perpetrators will prove

elusive. Till date, the proposed measures by the then government have had very limited impact as the deterioration continues. Making it even gloomier is the fact that the visible Chinese merchandise for everyday need creates the certainty that Ghanaians are more inclined to buying made in China commodities.

## **2.1 Diversity, Innovation, and Efficiency of Textiles and Fashion**

Diversity is a term that explains the addition of new categories and/or brands to build multi-product businesses. The nature of the robust competition in the textile/fashion industry requires the astute investor to reason outside the box in crafting unique opportunities for their growth, sustenance, and expansion. By the virtue of this, high level innovation and inventiveness is imperative.

According to Daft (2001), innovation reflects goals pertaining to internal flexibility and readiness to adapt to unexpected changes in the environment. Innovation goals are often defined with respect to the development of specific new services, products, or production process (Daft, 2001). Dobb et al (2006), considers efficiency to be the minimisation of resources that must be spent to achieve a specific level of desired goals and aspirations creation (a new device or process) resulting from study and experimentation. It is also considered the act of starting something for the first time; introducing something new.

Already research into alternative and high performing innovative textiles is on the ascendancy as portrayed by Bradley through bamboo which has been woven into everything from fashionable dresses like those made by Spun in Seattle and other respected labels, to towels, totes, and interior elements such as window treatments. This natural

textile is made from the pulp of the bamboo grass and is best in the organic form – pure and unbleached with sample exhibited by Plate: 2.1(a). It is a strong fabric, considered more durable and sustainable than conventional textile fibre. Considered a renewable resource, bamboo is a grass that thrives quickly. Making a case for cheaper but effective alternative materials, Bradley (2009), laments oak trees can take one hundred and twenty years to grow to maturity while bamboo can be harvested in three years. It also regenerates without the need for replanting and requires minimal fertilization or pesticides. The jury is still out on whether or not bamboo flooring is as durable as traditional European hardwoods. Quoting from Bradley (2009), Tree Hugger points out, now all bamboo products are alike. Since it is mostly shipped from China, there is the need to determine if the product is treated according to environmental standards. Companies such as Teragren are careful about adhering to strict environmental specifications.

The concept of the showcased clothing underscores the fact that diversity, innovation, and efficiency are paramount in the virtually saturated industry. Going for alternatives that have the market appeal under reasonable cost is the priority. Diversity expands the spectrum in stretching the line allowing satisfaction of varied and peculiar requirements of clients. In complementing diversity, innovation relates to adaptation towards prevailing conditions to facilitate the quest for survival. Efficiency ensures the commitment of resources responsibly to curtail wastage and abuse.



Plate 2.1(a): Bamboo Hardwood Dress

Source: Bradley (2009)

Hemp is grown without pesticides or fertilizers and is rapidly replacing plastic-based materials for clothing and home décor. A member of the Cannabis Sativa plant family, it yields 250% more fibre than cotton per acre plus 500% more pulp fibre than forest wood. Sold by the yard or already woven into bedding, curtains, or fashion garb by brands like

Eco Fabrik, hemp dates back to more than 10,000 years ago with a myriad of uses such as paper making, cloth weaving, and extracted oils for medicinal products and skin care. Plate 2.1(b) is a blouse prototype made from hemp.



Plate 2.1(b): Hemp Blouse

Source: Bradley (2009)

Soy fabric is friendly and soft and similar to cashmere or silk in texture. It is found in luxury items such as these cushy robes from Eco Body wear with Plate 2.1(c) being a classic example. Soybean protein fibre is a sustainable and botanical textile fibre made from renewable and biodegradable natural resources – the leftover soybean pulp forms tofu and soy milk production. Its 16 amino acids are healthy and nutritional for the skin.



Plate 2.1(c): Soya Bean Bathing Robes

Source: Bradley (2009)

From the Organic Trade Association, organic cotton grown by farmers worldwide increased 152 percent during the 2007-2008 crop year. Organic cotton is grown without harmful toxic pesticides and synthetic fertilizers meaning the farming methods and materials have a low impact on people and the environment. Production replenishes and maintains soil fertility to build biologically diverse agriculture. Genetically engineered seed for organic farming is strictly taboo, and all cotton sold as *organic* in the United States must meet strict federal regulations covering how the cotton is grown. In terms of products, it is much easier to find now in upscale and everyday clothing and underwear,

stylish bedding, rugs, bags, and many more. The baby suit of Plate: 2.1(d) is a modern example.



Plate 2.1(d): Organic Cotton Baby Suit

Source: Bradley (2009)

A rather more bizarre example is twisted balloons extracted from Frimpong (2007), being portrayed by Plate 2.1(e). The master piece reveals the inherent innovation and excitement that is unveiled when inventiveness is brought to the fore. To all intents and purposes, this is classic reflection of the fact that the versatility of textiles and fashion is unlimited.



Plate 2.1(e) Costume from Manipulated Balloon Knots

Source: Frimpong (2007)

Jezkova (2009), is quoted to have contended that technological changes in the textile industry during the last forty years can be broadly divided into three phases. High-speed spinning frames and looms with reduced vibration levels were developed in the 1950s and early 1960s. The most radical alterations in the core technology of spinning and weaving came in the late 1960s and during the 1970s with the introduction of rotor spinning and shuttle-less looms. This was the period when new technology was sought to increase productivity and thereby combat the cost-based competitiveness of lower wage producers from Asian countries. From the late 1970s onwards, the changes in the textile industry of

the developed countries have been characterized by the introduction of microelectronics based technology and the automation of high-speed processes.

Adding to the above, Jezkova (2009), noted that, investment cost associated with technology improvements in the textile sector has risen considerably. About US\$1 billion per year has been invested in the European Union, and twice as much in the USA throughout the late 1980s and early 1990s. These levels could double in the coming years. The impact of automation on employment has also been significant. During the last 15 years, employment in the textile and clothing industry in the entire EU area has declined by 40% and the forecast for the 1990s is a loss of seven hundred to one million jobs in the textile sector alone. The occupational structure has also changed with the proportion of operators and unskilled labourers decreasing while the share of technical and management staff increases. The new technologies require specialized skills in textile engineering, maintenance, design, computer science, information technology, and marketing.

The pace of technological innovation in the garment industry was slow up to the beginning of the 1980s. The main innovations before 1980 were in sewing technology with faster and more durable machines and the development of attachments for specialized tasks which later resulted in the emergence of task-dedicated machines. In the pre-assembly phase the introduction of fast automated cutters in the late 1970s replaced the operator-driven hydraulic die cutting machine, (Jezkova 2009). Jezkova (2009), continued, the major technological changes occurred in the 1980s, when microelectronics penetrated all stages of garment production to some degree. The most significant innovations took place in the pre-assembly stage, where computer-aided design (CAD), computer numerical control (CNC) cutting systems, and computer-aided manufacturing (CAM) led to impressive

material and labour savings. In the assembly stage which accounts for 80% of the manufacturing value added (MVA) and of the workforce in the industry, technological change has so far been relatively modest. The main improvements have been microelectronic control units which are attached to the standard industrial sewing machine to handle the more complex tasks. These can either be used to speed up production on task dedicated machines or to increase the flexibility of multi-purpose machines. The major technological innovations of the 1990s are likely to build on these developments.

Organizational changes complement the technological drive towards greater market responsiveness. These changes affect not only production itself, but also, the relationship between suppliers and buyers. The emphasis in the organization of production is shifting to a multi-skilled workforce, closer management-workforce cooperation, and increasing reliance on externally supplied industrial services. There is also a tendency towards vertical integration within the textile and garment industry. In the field of buyer-supplier relations, textile producers, garment makers, and retailers are working together in design teams. Price is no longer the only important determinant of sourcing: elements such as quality, timely delivery, and technical cooperation between buyer and supplier play an increasingly important role. The buyer-supplier relationship is also intensified by the reduced lead time and shortened production runs. This means that close proximity to the markets and availability of efficient international telecommunication and transport networks have become an important competitive factor for the producer countries.

Ghana's industrial predicaments have its sources from internal and external factors. A major aspect of the external factors could be attributed to badly haphazard town/city plan and bureaucratic bottlenecks from institutions of state (Ministries, Departments, MMDs,

Law Enforcement Agencies and the Judiciary). The major cities are so congested hampering smooth commuting of passengers and commodities. This has compelled many residents to be located away from the businesses in the central business districts of the major cities. The rising cost of energy and commuting risks have been making production cost soar continually. In Ghana at present, a gallon of gasoline is selling for \$6.80, PURC, (2011), highly outrageous! Expensive erratic power supply cost \$15.00 per 200.00kwh, (PURC 2010). The growing vehicles on the streets of Ghana is not as worrying as the importation of over-used vehicles, the average of which is already ten years before imported into the country. The average overhead cost is so high that many companies are rather finding it pretty difficult to survive. In 2005, British American Tobacco re-located to Tanzania as a cost effective measure. Significantly enough, one may want answers as to how much Ghana did between the late 1970s and early 1900s when the paradigm of radical revolution is believed to have led industry. For sure, this answers the question as to how come Ghana has been doing abysmally since the late 1970s.

The challenges that an investor should go through for approval of operating documentation is a nightmare but suicidal to win contract. Widespread bribery has made already huge overhead budget worse, requiring drastic measures to execute projects. Often, projects end up becoming shoddy. Engineer Woode, the guest for a radio programme on Joy FM in a related incident in 2009 blurted out, the major inputs required for future efficient production are: 'knowledge, technology, and time'. More and more, management experts have been emphasizing the fact that modern and future trends have shifted the traditional production inputs from land, labour, and capital. Unfortunately, the latter elements are the types that continue to abide in the textile industry of Ghana. To address these effectively, there should be strategic educational reforms that relate to national vision in shifting the

pattern to efficiency, effectiveness, and productivity. In relation to the above, there does not appear to be a clear cut industrial policy direction. There seems to be a move towards the sensitization and empowering of the private sector which is appreciable move anyway. Suggestions from AGI and think tanks like Institute of Development Commission (ISODEC) and IMANI (Ghana) all look like brainstorming making it difficult for the country to gaze at a precise focal point.

Compounding the aggregate industrial cost is the issue of security and law enforcement. Inconsistencies of educational programme and undefined national industrial focus are crucial in technological and industrial development, but that of security even makes it rather difficult for even the government business to run smoothly. This is probably the reason why utility supply is so expensive and erratic, in that it is so unreliable that enterprises have to make provisions for back-ups through generating plants for electricity supply; dependency on water supply from private tankers; to mention just a few. Very poorly designed and haphazardly built infrastructure has vastly contributed to unhealthy traffic congestion. Cases in courts can go unresolved for up to a decade as legal manoeuvring wears off capital. At the moment, it cost almost 25% interest to access credit for a business that is competing with Chinese, Japanese, Europeans and Americans who are paying between 1% and 2% for credit (as at mid-2010). Actually, making it more bizarre is the trend of purchasing fuel for astronomical prices.

Surely, the scourge against the local textile industry needs to be halted anyway as the overwhelming uncertainty is too warm for comfort requiring drastic measures for the long term stability and growth of the industrial sub-sector; as such, the need for innovation and efficiency.

## 2.2 Judicious and Productive Use of Waste as Unconventional Material

It is said that 'resources are not; they become'. Otabil (2008) is noted to have said that 'discovery is when the usefulness of something is revealed'. Until then, that material must have been nothing but waste.

### 2.2.0 Waste as Unconventional Productive Material

'Any materials unused and rejected as worthless or unwanted is termed as waste' – Word Web Encyclopaedia, (2008). If the above is anything to go by, then waste might not be that wasteful after all. Word Web Encyclopaedia, (2008), also defines resource as: 'available source of wealth; a new or reserve supply that can be drawn upon when needed'. Hence, it makes sense to conclude that all resources used to be waste till they were discovered; thus, the assertion that "resources are not, they become" appears valid. Wikipedia, (2010), declares that biodegradable waste is a little recognized resource. Biodegradable waste is an important substance due to its links with global warming. When it is disposed of in landfills, it breaks down under uncontrolled anaerobic conditions. This produces landfill gas which, if not harnessed, escapes into the atmosphere. Landfill gas contains methane, a more potent greenhouse gas than carbon dioxide. Furthermore, the Wikipedia, (2010), published that the weight of the world's total waste generated for landfills is approximately eight billion (8,000,000,000) a year, excluding the one consumed in the ocean that appears to be in the region of over fourteen billion (14,000,000,000) pounds per year.

The MS Encarta Dictionary, (2009), describes unconventional as: “different from what is regarded as normal or standard”. By inference, unconventional could be taken for exception; alternative; eccentric; unusual; avant-garde. Better still, it is radically new or original; in other words, any creative group active in the innovation and application of new concepts and techniques in a given field (especially in the arts) – Word Web Encyclopaedia, (2010). Breaking out of norms through innovative transformational changes has been among the key sources of invention, efficiency and effectiveness. It demands proactive thinking to making possibility out of the unthinkable. Thomas Edison (inventor of incandescent bulb) is quoted in MS Encarta Encyclopaedia, (2009), to have stated in the late 1800s that, in future, there shall be invented equipment that shall fly and not too long after his pronouncement in the first quarter of the next century, it became a reality.

Equal concern of the environment is perceived from Cleantech (2009), which is quoted to have stated that residual household waste has decreased by 22% from 2000/01 to 2006/07 as a result of diversification and alternative uses for waste in England. This is equivalent to an average of 16kg per person per year across England or 42kg per household, the institution continued. The mayor of Accra – Vanderpuje (2010), indicated that, Ghanaians have been producing more and more waste in each passing year and that populated areas like Accra is running out of space for new dumping sites. Biodegradable waste is a type of waste, typically originating from plant or animal sources, which may be broken down by other living organisms. It can be commonly found in municipal solid waste (sometimes called biodegradable municipal waste [BMW]) as: green waste; food waste; paper waste; biodegradable plastics.

According to Koziar (2009), when the clean-ups of expired tyres ended in late 1998, there were less than 50 sites remaining in Georgia, an American State, each with less than 500 tyres in them. However, with the removal of the incentive program, it is unknown at this time just exactly how many tyres exist in piles across the state. According to unofficial recent surveys, the DNR places the estimate for current state stockpiles at around 1.5 million tyres. In its publication, SHWEC (2009), established that often large numbers of tyres are accumulated in tyre piles. Tyre piles present a number of potential dangers. Perhaps the greatest immediate danger is the potential for massive tyre pile fires that in turn can lead to a number of environmental problems and then the breeding of assorted species of mosquitoes from collected deluges in tyre piles. Among others, SHWEC (2009), continued that clothes and doormats are some of the products to be derived from tyre recycling.

Another innovative utilisation of waste stems from eggshell. In reference to SHWEC (2009), each year in Georgia alone, more than 37 million pounds of eggshells are directed to landfills. Such a large amount of waste is both an environmental (rotting shells generate mal-odours and attract pests) and economical (companies pay upward of \$100,000 annually to dispose of the eggshells) problem. With many landfills nearing capacity, Georgia Tech researchers recently undertook an effort to develop an alternative to landfills that extracts value-added by-products from eggshell waste. The study is being funded by Georgia's Traditional Industries Program for Food Processing (Georgia Tech Researchers Partner with Industry), SHWEC (2009). "For years, some of these eggshells have been converted by the rendering industry into animal feed supplements. And these same eggshells also have components of value to the papermaking, pharmaceutical, and

biochemistry industries,” explains Hsieh, (2009), a professor in the Georgia Tech School of Chemical and Bio-molecular Engineering and the study’s principal investigator, SHWEC, (2009). Hsieh and his research team are concentrating their efforts on using the main component, calcium carbonate ( $\text{CaCO}_3$ ) in papermaking applications. “We are interested in determining whether coatings based on our chemistry and used with calcium carbonate from eggshells would offer some synergistic benefit for the inkjet printing application,” says Kokoszka (2010), vice president of EvCo.

In support of waste recycling, David De Roshchild was profiled on Back Story at CNN upon producing yacht with disposed plastic water bottles, (Corren, 2010). From the programme hosted by Holmes Michael, Corren (2010), reported De Roshchild to have produced the vessel named *Plastiki* in San Francisco of US with twelve thousand, five hundred (12,500) disposed water bottles and travelled across the Pacific Ocean with it in four months. In its maiden voyage, the *Plastiki* sailed in a distance of 8,398 nautical miles between San Francisco and Sidney of US and Australia respectively between March 20, 2010 and July 26, 2010.

Clearly, the global waste scourge has reached a crisis point. It may appear that frantic efforts to make the planet greener have become the responsibility of the well-endowed countries but, even the destitute are gradually rising to the challenge of turning the tides.

Relating to the above, a journal publication by Fynn (2009), delivered a story where the Mayor of Accra – Vanderpuje, Alfred Oko proposed, ‘Waste-to-Energy Approach’ is an enormous opportunity for private sector development where micro, small, and medium scale enterprises in Ghana can mobilize communities to take up the challenges of positioning Ghana in the global market. From the story, the Mayor is purported to have

said that “the Ghana Innovation Market (GIM) is a competition that seeks innovative strategic solutions to Ghana’s growing problem of solid waste management. The competition is designed to stimulate about five hundred (500) small-scale actors and partner organizations to generate innovative and sustainable project ideas”. At the forum, Odoi (2010), also announced that up to one hundred (100) projects would receive capacity support as well as handsome awards of GH¢10,000.00 – GH¢50,000.00.

In Sri Lanka, ethanol has been developed from straw. Arduino (2009), reporting for CNN actually stated that, 2m<sup>3</sup> of straw forms 1 litre of ethanol from University of Peredynya, Sri Lanka. Being a net importer of petrol, this virtually impoverished nation can save up to 1 billion dollars annually on petrol import (Arduino, 2009). On Super Morning Show at Joy FM hosted by Kojo Opong Nkrumah in 2009 on the subject Eco-Friendly Utilization of the Environment, it was reiterated by one of the resource persons that utilising waste as a resource is a hundred billion dollar global industry. The pictures shown below by Plates: 2.3(a), 2.3(b), and 2.3(c) are images snapped at the Junior Common Room for Under Graduate Students of KNUST showing how wasteful ceramic wears have been utilized into excellent artistic piece through sculpture. If the above is anything to go by, then **“Combination of Textiles, Fashion, and Sculpture for Unconventional Costume Mounted on Statue”** could not have come at any better time than now. This has the potential of even expanding the horizon to consider other artistic uses for corn husk and plantain leaf. Likewise, it should initiate interest in making waste useful as the planet fervently seeks for alternatives to prolong and sustain life whiles expanding productivity responsibly through ensuring positive environmental impact.



Plates 2.2(a), 2.2(b), & 2.2(c): Ceramic Monument from Abandoned Water Closet – Views from the Right, Front, and the Left respectively

Source: Field Data (2009)

The above is the major drive for the pursuit of this course. If the Indians could make fibres out of bamboo; the Australians could turn wine into fibres; plastics and bottles could be converted into fibres by the Americans; then Ghanaians could make fibres out of withered back of plantain leaf and dried corn husk.

### 2.2.1 Textile Fibrous Materials

Textiles is a term that is believed to have been adopted from an ancient Latin terminology that meant to 'weave'. Appropriately so because until the 20<sup>th</sup> Century, virtually all textile fabrics were made through weaving derivatives like: plain, rib, and basket likewise antique diversity of knitting, crocheting, embroidery and appliqué. At present, textiles has become

a generic term that encompasses process of developing and producing fibres, yarns, and fabrics, (Amenuke et al, 2002).

Fibrous is also an adjective that has its source from the word fibre. Fibre has literary been defined as: “a hair-like structure that acts as the basic element for the construction of different structures” (Sackey, 2002).

The discipline of textiles, however, has found the literary definition of fibres inadequate and hence, given technical definition as that, textile fibre is anything that exhibits the following essential characteristics:

- I. High Length per diameter ratio: a lengthy chain of the distance of the diameter should equate the length of the fibre.
- II. Flexible: it must have been reasonably malleable
- III. Fineness: that is tiny silky strand
- IV. Length per unit weight: a longitudinal division of a fibre should produce a rectangle. If the area of such a rectangle produces a very small figure, then the said item could be described as a fibre (Crentsil, 2003) and (Omari, 2008).

Practically, the twisted strands of the corn husk and the dried withered plantain leaf could be described as fibres and yarns as they fit the literary definitions from dictionaries and encyclopaedias and depict the features as espoused by the above essential characteristics in relation to textiles.

‘Materials’ is the plural of the word material that has been defined by the Word Web Encyclopaedia, (2008), as: “The tangible substance that goes into the makeup of a physical

object”; “artefact made by weaving or felting or knitting or crocheting natural or synthetic fibres”; “things needed for doing or making something”. The MS Encarta Dictionary, (2009), defines material as: “fabric – woven flat cloth or fabric”; “something used in making items – the substance used to make things”; “Material is a matter from which a thing is made; cloth, fabric; things needed for an activity (building materials); person or thing of a specified kind or suitable for a purpose”, Oxford Pocket Dictionary, (2009). Materials are the ingredients or inputs that are required for production. In producing costumes, the ingredient of dried withered plantain leaf and corn husk could then pass as materials for they mark the underlining input from which the purported apparel shall be made. Hence, dried corn husk and plantain leaf which are materials that could be taken for biodegradable waste could also be described as *textile fibrous materials* since they satisfy the requirements of conventional textile fibrous materials when twisted and braided. Since the twisted and braided dried corn husk and the plantain leaf are substances from which a thing (like textile fabric) could be made and possess the following essential characteristics it could be said to be endowed with the essential characteristics as espoused by, Crenstil (2003) and Omari (2008), for that matter, qualifies to be textile fibrous materials.

### ***2.2.2 Costume Mounted on Statue***

The Word Web Encyclopaedia (2010) defines statue as a sculpture representing a human or animal. Collins (2007) quoted Aldo Rossi that monumental reflects sign upon which one reads something that cannot otherwise be said”. By the definitions, the statue at the centre of the research intended to captivate audience at the vicinity where it is to be showcased that people cannot fail notice or be impressed. Costume could be described as dress, coat,

or suit with coordinated accessories, an ensemble (Calasibetta and Tortora, 2003). These two authors also added that costume also covers fancy dress for masquerade parties, Halloween, costume and masked balls. Monumental costume obviously is clothing but not just the ordinary type.

The composite of the nature of costume involves apparel, accessories, and even make ups of unique form. The design of the costume shall have significant fancy, flamboyant, exquisite, style, passion, and romantic appeal that should captivate all attention at the first glance. The design should reveal the associated rules of special showy outfit for unique occasions associated with carnival and picnic but classic enough to connote formality in private and public places. Hence, **“Combination of Textiles, Fashion, and Sculpture for Unconventional Costume Mounted on Statue”** should be seen as the adoption of ordinary dried corn husk and plantain leaf that hitherto, ought to be treated as waste into exclusive and fanciful costume for the tabloids crafted from textiles.

The novelty apparel would then be clad on a moulded image depicting the typical African beauty of proportionate curvature for artistic appeal in halls, lobbies, and living rooms of classic hotels, auditoriums, theatres, conference centres, cruise vessels, and homes. Reflections from the above definition project this inquest as quite an unequalled art piece that has merged bio-degradable materials to compose normal dressing and displayable art work as common unit intended to drift textiles, fashion, and sculpture collectively into new dimension. It involves textiles because the corn husk and plantain leaf shall be spun into yarns and stitched into fabrics. The yarns and the fabrics should form the main materials for the manufacture of the apparel and the complementary accessories to make a whole

dressing. This flamboyant costume will then be fitted on a well-structured and moulded female statue.

### 2.2.3 Corn Husk

Ranero and Piperno (2009), postulates that corn is a crop that historians, archaeologists, and anthropologists believe to have been cultivated as early as 8,700 calendar years ago.



Plate 2.2(a): Stalks, Ears, and Silk

Source: Wikipedia, (2009)

Maize stems superficially resemble bamboo canes and the internodes can reach 20cm – 30cm (8in – 12in). Maize has a very distinct growth form; the lower leaves being like broad flags, 50cm – 100cm long and 5cm – 10cm wide (2ft – 4ft by 2in – 4in); the stems are erect conventionally 2m – 3m (7–10ft) in height with many nodes casting off flag-leaves at every node. Under these leaves and close to the stem grow the ears that mature into cob, the fruit as illustrated by 2.2(a) and 2.2(b).



Plate 2.2(b): A Woman Fertilizes Corn (Maize) Plants near Wedza, Zimbabwe

Source: Britannica Encyclopaedia, (2010)

The cob is a casing that is made of sheet like material referred as husk. The real fruits (the grain) are within the casing that is removed during harvesting and the husk is discarded to mulch in the fields or incinerated.

The aspect of the crop that is significant in this exercise is the husk, a by-product of maize as it is often disposed of as waste having removed the grains. The design of the study is to find innovative alternatives into making artefacts from the husk (waste). Art is a phenomenal discipline that makes tremendous use of innovation, creativity, and inventiveness. Cultures and traditions of the pre-historic era till date have been transformed through art. The diversity of artistic media is driven by the fact that uniqueness, originality, and mystery are indispensable elements. In essence, this initiative has the potential of

utilizing virtually total local ingredients for making a statement for survival and expansion regardless of the weaknesses and threats pertaining. These qualities call for the development of unusual things with common material samples of which some have been showcased below Plates 2.2(c) and 2.2(d).



Plate 2.2(c): Gold Maize Moche Culture 300 A.D.

Source: Larco Museum, Wikipedia, (2010)



Plate 2.2(d): Water tower in Rochester, Minnesota being Presented as an Ear of Corn

Source: Wikipedia, (2010)

In her publication, Cartwright, (2011), reveals that a corn dolly is another artefact from the husk and is a small figure made of straw. Corn dollies are part of the folk customs surrounding the grain harvest in Great Britain and much of Europe. In that part of the world, "corn" originally referred to any grain, especially wheat, and it is grain straw - not modern corn - that goes into making corn dollies. When referring to corn dollies, the word "dolly" is probably a corruption of the word "idol". Maize has been an essential crop in the Andes since the pre-Columbian Era. The Mouche culture from Northern Peru made ceramics from earth, water, and fire. This pottery was a sacred substance formed in significant shapes and used to represent important themes. Maize got represented anthropomorphically as well as naturally. The weird but lovely Gold Maize [Plate 2.5(c)] Mouche from Lima, Peru is characteristically cultural and traditional espousing the significance of the crop to the culture and tradition of the people. From hindsight, it appears the community that developed such artefact should be glorifying the incredible value of maize to them hence, the cast in what looks like gold. In the United States, maize is sometimes used for temporary architecture detailing when the intent is to celebrate local agricultural productivity and culture. A well-known example of this use is the Corn Palace in Mitchell, South Dakota, which utilizes cobs of coloured maize to implement a design that is recycled annually. A corn stalk with two ripe cobs is depicted on the reverse of the Croatian 1 lipa coin, minted since 1993.

The above illustrates graphically the significance of maize through public display within the communities that treat the crop as treasure. Obviously, the Maize Gold Mouche of Peru should be great value that it is unlikely to be left in the open. However, all the arts under review direct public perception for the appreciation of the artefact as monumental costume in this research attempts undertake.

### 2.2.3 Plantain Leaf

*Musa Paradisiaca*, the plantain, is a crop in the genus *musa* and is generally used for cooking in contrast to the soft sweet banana. Plantain, better still Banana, is a tropical herbaceous plant consisting of an underground corm and a trunk (pseudostem) comprised of concentric layers of leaf sheaths. At 10 to 15 months after the emergence of a new plant, its true stem rapidly grows up through the center and emerges as a terminal inflorescence which bears fruit (Crane and Balerdi, 2009). Plantains tend to be firmer and lower in sugar content than dessert bananas. Plantain leaf grows on the plant *Plantago lanceolata*. It is known by several common names, including common plantain, greater plantain, as well as soldier's herb as shown by Plate: 2.2(e). The leaves of this plant are deeply veined, and the plant itself is an herbaceous perennial. It reseeds very easily and can be invasive in some areas. Dried plantain leaf is typically steeped as a tea, and in herbal medicine traditions has commonly been used to reduce skin inflammation and intermittent fever.



Plate 2.2(e): Plantain Tree

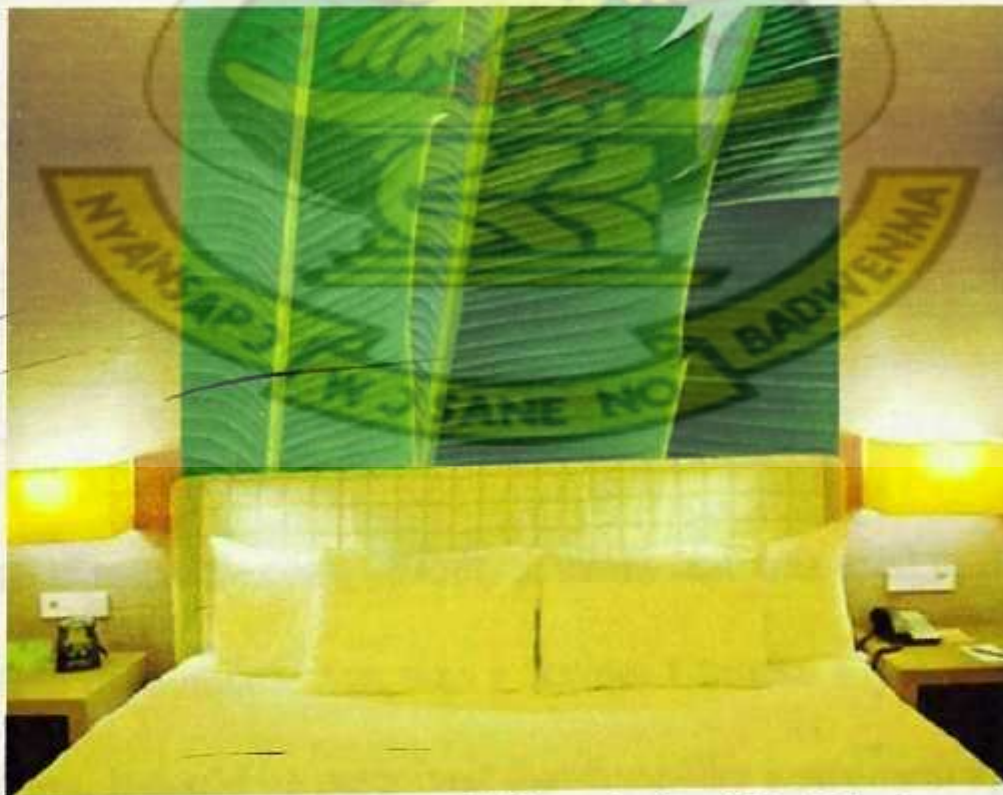
Source: Field Data, (2011)



**Plate 2.2(f): Plantain Tree Bearing Fruits**

Source: Crane and Balerdi, (2009)

Like maize, plantain tree is often needed because of its fruits and upon harvesting, discarded. Figure 2.2(f) illustrates plantain tree bearing fruits. The lower section of the tree that appears as the stem is the subject of interest in this text.



**Plate 2.2(g): Mounted Plantain Leaf for Display**

Source: Herbs Botanical (2011)

In a related publication, Herbs Botanical, (2011), depicts preserved fresh plantain leaf that has been positioned in a case for a very simple yet unique and colourful work of art. The artefact is endowed with cylindrical form cast with repeating bands of pointed plantain leaf in raised relief, a dolphin handle and a forged swivel mounting (Length 35 inches). The excitement that it generates is enhanced by the background which is dominated by gold and beige to project the bed and the bedroom as illustrated by Plate: 2.2(g). Unlike maize, very little of plantain has been used as artefact regardless of the fact that various parts of the crop are being used purposes that are not art related.



Plate 2.2(h): Wine Vessel

Source: sinaeanlife.com (2010)

In a reference from sinaeanlife.com, (2010), plantain leaf was used to decorate Zun's neck in a commemorative monument. Zun was a former Chinese royal of the Zhou Dynasty. After careful studying, it could be perceived that flute-like instrument appears to have been carved from the shaft holding plantain fruits.

The mountain leaves behind the bed in plate: 2.2(g) and the antique flute of plate 2.2(h) might not qualify as public as public as they look private and hence, restricted audience. However, the presence of artistic principles makes it exciting to perceive; more so to have had plantain plant to have been the key material supports the argument of the possibility of using plantain plant especially leaves as artefact.

### 2.3 Alternative Use for Disposed Textiles and Clothing

Again from Jezkova (2009), through Textiles Recycling Association published that, the quest for innovation in global industry is compelling and involving that no institution or nation can take it for granted; it symbolizes the projection for survival in this rapidly changing world. In the textile industry, innovation and diversity is being approached from all fronts of which one is recycling. Textile recycling originated in Yorkshire Dales about 200 years ago. These days the 'rag and bone' men are textile reclamation businesses which collect textiles for reuse (often abroad), and send material to the 'wiping' and 'flocking' industry and fibres to be reclaimed to make new garments. Textiles made from both natural and man-made fibres can be recycled. It is estimated that more than 1 million tonnes of textiles are thrown away every year, with most of this coming from household sources. Textiles make up about 3% by weight of a household bin. At least 50% of the textiles we throw away are recyclable; however, the proportion of textile wastes reused or recycled annually in the UK is only around 25% (Jezecova, 2009).

In a related presentation, a facilitator Bibi (2009), delivering lecture under "Fashion Fetishism" argued that one of the most notorious polluting industries is the textile/fashion industry. In this vein, any conscious move in the textile/fashion sub-sector for efficient and

effective commodities with relatively little diverse impact on the environment is welcome news certainly.

From yet another reference to Jezkova (2009), prevailing trends affect not only the direction, composition, and volume of international trade in textiles and garments, but also the industrialization process and labour markets at country and regional levels. Empirical studies of industrial development in the Asian region have identified four development stages (see the table at the next page) characterized by changes in four parameters: natural and social resource endowments; level of industrialization; technological capabilities and human resources; Government policy on environment.

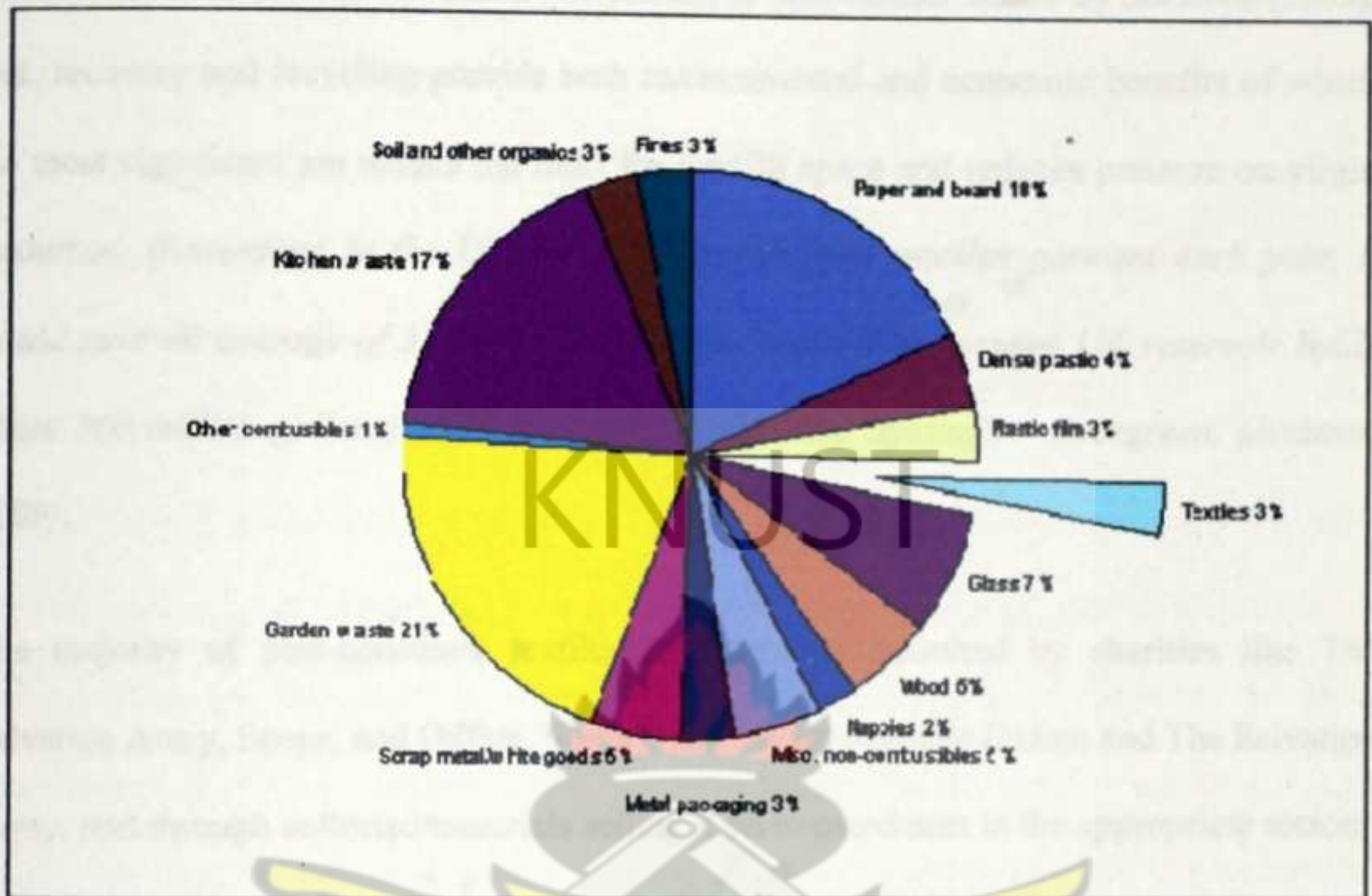
The four-phase model provides a useful analytical tool to be applied to the empirical evidence presented in the study.

**Table 2: Use of Endowments**

<b>Natural Resources</b>	<b>Human Resources</b>	<b>Facilities/Technical Resources</b>
<ul style="list-style-type: none"> <li>➤ Cotton</li> <li>➤ Silk</li> <li>➤ Low Cost Labour</li> </ul>	<ul style="list-style-type: none"> <li>➤ Human Capital</li> <li>➤ Technology</li> </ul>	<ul style="list-style-type: none"> <li>➤ High Technological Capabilities (Invention, Adaptation, and Application)</li> <li>➤ Highly-Skilled Manpower: Key Role of Support Infrastructure</li> </ul>

Source: Jezkova (2009)

Chart 1: Composition of MVA



Source: Jezkova (2009)

Table 2 reveals internal innovative developments that improved efficiency and effectiveness. In the zone where the study was undertaken, cotton, silk, and low cost labour remain the key natural resources. Human resources now considered human capital and technology go along with high-tech production methods. The role of the state was not emphasized because it is out of the direct domain of industry. The Chart 1 does depict the relative extent to which textile contributes to global waste. Although the majority of textile waste originates from household sources; textile wastes also arise during yarn and fabric manufacture, garment-making processes and from the retail industry. These are termed post-industrial waste as opposed to the post-consumer waste which goes to jumble sales

and charity shops. Together, they provide a vast potential for recovery and recycling, the website Jezkova (2009), continued. Moreover, it was further stated by Jezkova (2009), that, recovery and recycling provide both environmental and economic benefits of which the most significant are reduce the need for landfill space and reduces pressure on virgin resources. *If everyone in the UK bought one reclaimed woollen garment each year, it would save an average of 371 million gallons of water (the average UK reservoir holds about 300 million gallons) and 480 tonnes of chemical dyestuffs – Evergreen, (Jezkova, 2009).*

The majority of post-consumer textiles are currently collected by charities like The Salvation Army, Scope, and Oxfam. Some charities, for example Oxfam and The Salvation Army, sort through collected materials selling it on to merchants in the appropriate sectors. *Over 70% of the world's population use second hand clothes – Textiles Online, (Jezkova, 2009).*

Some post-industrial waste is recycled 'in-house', usually in the yarn and fabric manufacturing sector. The rests, aside from going to landfill or incineration are sent to merchants. Nearly 70% of items put into clothing banks are reused as clothes, and any unwearable items are sold to merchants to be recycled and used as factory wiping cloths.

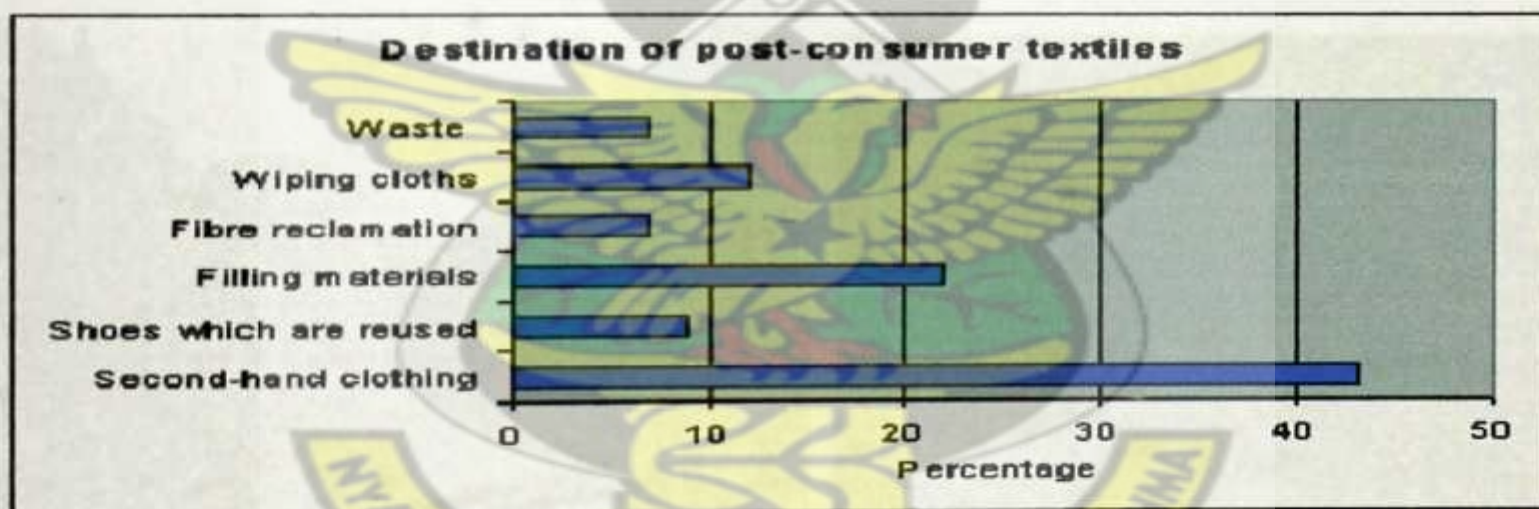
~~Prior~~ to the study published by Pavla Jezkova in 2009, Erdtex (2007), had already presented findings on some research on impact of used clothing in three African countries: Benin, Cameroon, and Ghana. In the past years, there has been a controversial discussion about the question, whether exporting used clothes to developing countries is harmful. Studies of the Swiss Academy for Development (SAD) on social compatibility and public acceptance of used clothing exports to Africa, as well as a short report by the German

Federal Ministry for Economic Cooperation and Development (BMZ) on used clothing exports showed that these exports do not ruin the domestic textile industry. The study of the BMZ for example examined the results of used clothing export to Benin, Cameroon, and Ghana. The study concludes that there is no evidence of a harmful effect of the used clothing imports. Even a current study by the organization, "Fairwertung" an umbrella organization for textile recyclers comes to the conclusion that used clothing exports from Western Europe have no negative effect on textile and clothing industry as well as textile trade in Central and Eastern Europe. It is a matter of fact that the people in developing countries are not poor because they import used clothes, but they buy used clothes because they are poor and have been poor before the imports started. An import ban for used textiles as well as high customs duties and subventions will not change anything. Many people buy used clothes because they cannot afford new clothes. The main cause for the African cotton industry was the poor quality and the insufficient competitiveness on the market. An import ban would particularly affect the poorest of the people. "And the frowned upon imports of used clothing have already created many jobs in these countries, as e.g. wholesale traders, market traders, tailors, dyers". The import of used clothes has created a new industry branch in these countries. In those developing countries there are local tailors, cheap imports from Asia and there are used textiles. As a matter of course, anybody will choose the more favourable clothes for everyday use, and for holidays, maybe something more elaborate and expensive. *The average lifetime of a garment is about three years – Textiles Online, (Jezkova, 2009).*

Evergreen produces yarns and fabrics from recycled fibres (Jezkova, 2009). Their most successful products are in-blends spun from English and Chinese hemp and recycled

denim in addition to other recycled fibre blends containing wool, cashmere, silk, and PET, Jezcova (2009), and Bradley (2009). The re-use of clothes is promoting a new breed of designers. NoLoGo are a team of volunteer designers set up by Oxfam who re-style donated garments and fabrics selling them-on at some Oxfam shops. The export market is rapidly growing as more market points are set up abroad. Some merchants also offer an array of services to encourage more collection, such as security uniform shredding prior to recycling. Chart 2 provides picturesque impression of eventual destinations of textiles. Large quantities of water, energy and detergents are required to clean and dry clothes. It has been suggested that this is the most polluting stage of the textile life cycle (Evergreen), Jezcova, (2009)

Chart 2: Destination of Post-Consumer Textiles



Source: Jezcova (2009)

The four-phase model as espoused by Jezcova (2009), provides a useful analytical tool to be applied to the empirical evidence presented in the study. The study defines technology as machinery and equipment, know-how or skills, information on new trends, and forms of organization (Bradley, 2009). The eco fibre option of choice, PET connotes Poly Ethylene

Terephthalate, a plastic resin and a form of polyester. PET is a polymer that is formed by combining two monomers called modified ethylene glycol and Purified Terephthalic Acid. PET is labelled with the #1 code on bottles and containers used to package soft drinks, water, juice, peanut butter, salad dressings and oil, cosmetics, and household cleaners. PET is a popular package for food and non-food products because it is inexpensive, lightweight, resalable, shatter-resistant, and recyclable. To source the post-consumer bottles, they are sterilized and then dried and crushed into tiny chips. The chips are heated in a vat and forced through spinnerets (as with virgin polyester) and then are spun into yarn and dyed without toxic properties. Everything from carpets, bags and clothing to wall coverings, furnishings and craft felt as depicted by the saddle bags, mat, and bed spread through.



Plates: 2.3(a) and 2.3(b): Plastic Blended with Polyester School Bags and Mat respectively

Source: Bradley (2009)



**Plate: 2.3(c): Upholstery from Plastic and Polyester Blend**

**Source: Bradley (2009)**



**Plates 2.3(d), 2.3(e), 2.3(f), & 2.3(g): Recycled Plastic Bottles – Eco-Friendly Apparel, Bangles, Hand Bag, and Apparel respectively**

**Source: Bradley (2009)**



Plates 2.3(h), 2.3(i), &

2.3(j): Soft blends of soyabeans, organic cotton, and bamboo knitted into jersey and then coloured with organic/herbal dyes and printed eco-friendly silk lingerie respectively

Source: Bradley (2009)

According to scientific reports from the global media, since the 1950s when temperature and atmospheric data began to attract serious attention, environmental degradation has been on the ascendancy with its extreme effects, some of which have the prospects of threatening human existence in the world. Environmental issues have become a global concern and now, many a nation and an investor is just not seeking plausible economic opportunities but environmental friendliness as well. Further products of PET turned into blouse, trousers, bangles and hand bag have been showcased by Plates 2.3(d) to 2.3(g)

Plates 2.3(h), 2.3(i), and 2.3(j) are additional illustrations showing other derivatives for alternative textiles that are efficient and effective. Referring to a Malaysian professor on

the Super Morning Show on Joy FM in 2010, current global bio-degradable industry is estimated to generate annual revenue in excess of US\$100 billion. Should the state of Ghana make just a percentage of this, the nation must have been assured of US\$1 billion dollars from efficiently and effectively managing its environment and to some extent, waste. If the crumpling textile/fashion industry is fighting for buoyancy amidst the pervading cheaper imports from China and the likes, then this could be an opportunity for diversification and thus, resuscitation.



Plates 2.3(k) & 2.3(l) respectively: Tailored Apparel Showcased as though Worn and Khaki Apparel on Deteriorated Surface

Source: Deeley (2009)

On the contrary, the innovation could be directed to textile art where the textile material or the clothing item in focus should be structured and presented not as a dressing for humans but interior or exterior décor. The appreciation of this type which used to be quite uncommon but now, making in-roads in the general art market is equally an alternative as

new prospects for the industry is sought. As discussed earlier, images from Deleey (2009), like the types of Plates 2.3(k) and 2.3(i) below do not only satisfy the perception of the patrons but reveals the psyche of the artist portraying the adaptability and creativity that are wielded within.

In complement to the above, other galleries have showcased the following as presented below:



**Plate 2.3(m): Mosaic Monday – Natural (Textile Art Derivative in Mosaic)**

**Source: Saxby (2010)**



**Plate 2.3(n): Austin\_c10 (Combination of Collage and Mosaic for Roof)**

**Source: Austin (2010)**

The display of textile art as depicted by Saxby and Austin respectively show mosaic and collage wall hanging derivatives that have its origin from textiles as illustrated by Plates: 2.3(m) and 2.3(n). These artefacts go to endorse the appreciation of textile art.

#### **2.4 Textile Art as an Alternative in the Broader Textile/Clothing Industry**

Textile art used to be a manual domestic craft that developed into a viable commercial entity with time and continued to grow into automation and now; CAD and CAM have simply become indispensable elements for its efficiency, effectiveness, and eventual survival: that was the textile/fashion industry, (Ulzen-Appiah, 2009). According to Ulzen-Appiah (2009), textile art is a derivative of textiles that is composed not necessarily for direct human use as conventional textiles but for the aesthetic appreciation that it conveys. Originally, many believed clothes evolved from sheer adornment of leaves and furs not for essential purposes like covering nakedness, protection, or even the blocking of excretion from the orifices at the crouch, but sympathetic magic. Sympathetic magic is an ancient art that invokes supernatural powers to hunt prey and defend during attacks through the wearing of amulets, talismans, concoctions, and paintings of bruised or restricted preys or enemies, Amenuke et al, (2002).

The amulets and talismans appeared as leaves, twigs, furs, animal tails, teeth, cowries, and bones. The complexity of mankind has made man to be in non-ever ending search for better means of survival which has stimulated growth and civilization. The revolution that civilizations bring also impacts on the general lifestyle of which clothing and textiles form integral part. In its wake, civilization has brought about massive change that has affected

even the perception and appreciation of things and events. It is from this angle that textile art draws its strength. Hence, the basis of “Unconventional Textile Fibrous Materials for Monumental Costumes” to go into new alternative textile products through the use of cheap and readily available wasteful materials (dried corn husk and back of plantain leaf) and converts it into textile materials for flashy apparel not for humans per se but, clothe carved female statue as a textile art.



Plates 2.4(a), 2.4(b), & 2.4(c) respectively: Textile Art Samples (Wall Hanging and Baby's Cot)

Source: <http://www.textile-art.com/kaiist/kaiist.html>, (2009)



Plates 2.5(d), 2.5(e), & 2.5(f) respectively: Samples of Textile Art (Wall Hanging)

Source: Wikipedia, (2009)

Sorted artefacts of this (textile art) have been shown for artistic appreciation, innovation, and inventiveness.



Plates 2.4(g) & 2.4(h) respectively: Knotted and Stitched Fabric Decorated with Pegs and Knotted and Stitched Fabric Decorated with Beads

Source: Deleey, (2009)



Plates 2.4(i) & 2.4(j) respectively: Khaki Apparel on Deteriorated Surface and Adorn Folded Fabric Strips

Source: Deleey, (2009)



Plates 2.4(k) & 2.4(l) respectively: Complex Intermeshing of Yarns over Rods and Star

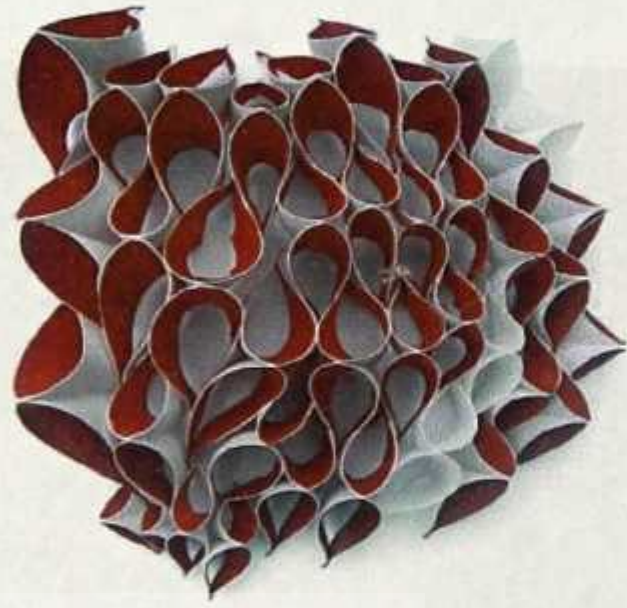
Imitation from Fabric Folds

Source: Deleey, (2009)



Plates 2.4(m) & 2.4(n) respectively: Jacquard Derivatives (Compact and Loose)

Source: Deleey, (2009)



Plates 2.4(o) & 2.4(p) respectively: Dressing without Model and Bee Hive Imitation

Source: Deleey, (2009)



Plates 2.4(q), 2.4(r), & 2.4(s) respectively: Scrap Fabric Pieces in Rack; Mug Casing; Wall

Hanging

Source: Buckle, (2009)



Plates 2.4(t) and 2.4(u) respectively: Fabric Mosaic and Colourful Tapestry from Sparkling Trimmings

Source: Flickr, (2010)

Plates 2.4(d) and 2.4(e) show extensive use of fabric decorative techniques as samples of textile art through the combination of appliqué and embroidery. The Plate 2.4(f) rather looks even more interesting. In addition to the textiles, sculpture was also adopted in forming the baby's cot and finished with a doll sleeping in the cot, <http://www.textile-art.com/kaiist/kaiist.html>, (2010). Complementing the above are more exciting derivatives from <http://www.textile-art.com/kaiist/kaiist.html>, (2009) showing the creativity and flexibility by which textiles could be used for other purposes other than the status quo. Plate 2.4(g) depicts the use of knotting and stitching jointly over pegs. However, Plate 2.4(h) made use of the knots and stitches but eliminated the pegs and used beads. On the contrary, Plate 2.4(i) shows a very creative piece by displaying brown and white khaki on a

brown and white dilapidated surface, <http://www.textile-art.com/kaiist/kaiist.html>, (2009). From the same website, Plates 2.4(j) reveals the wonders that folded fabrics can represent. The former demonstrates twisted and turned fabric strips into decorative trimming on the dress adorn by the lady. The Plates 2.4(k) and 2.4(l) display effects of creative multiple folds from fabrics and fastened to maintain stability in making imitation stars and upholstery with spines respectively. Looking like jacquard, Plates 2.4(m) and 2.4(n) are samples showing various ways of intermeshing yarns into decorative fabric pieces. The fascinating Plate 2.4(o) should probably heighten the unlimited manipulation of textiles for multiple adoptions as shown through the alternative adjustments of ancient clothes to have mobile effect as if it is being worn by man. Using related folding technique, Plate 2.4(p) illustrates the formation of a bee hive. The three samples extracted from Deleey, (2009), show the alternative use of textiles like the earliest. In Plate 2.4(q), fabric scrap has been worked into the cast slabs and fitted into a rack. The next – Plate 2.4(r) involves a mug case that has been so designed for beauty and protection against minor impact from accident. The last, Plate 2.4(s) shows the combination of embroidery and fabric bearing the musical symbol g-clef. The final presentation indicates in Plate 2.4(t) samples of fabric pieces put together as mosaic for decorative art, Flickr, (2010). The next portrays colourful fabrics, trimmings, and threads constructed as tapestry 2in Plate 2.4(u) from, Flickr, (2010).

If the above are indeed anything to go by, then for sure, this textile art should be appealing enough to charm lobbies, halls, auditoriums, decoration of other public places and living rooms to add glamour and passion. Textile art is equally related to the broad discipline of textiles but its nature differs from the known textiles on the score that, it is not to be used directly for dressing the human body and/or fixing industrial and medical

gadgets/materials, but for emitting aesthetic appeal through the stimulation of appreciation as the typical artefact does. Even though most of the identified examples appear to be wall hangings, this study seeks to delve further into the subject of textile art there by exploring into other areas probably, yet to be considered to propel the excitement that of arts.

## 2.5 The Art of Sculpture

The history of sculpture is varied and is illustrative of how sculpture has changed extensively over the ages ranging from low technology, idealism, and realism to advanced technology. As indicated by Ocvirk, Otto G. et al (2006), sculpture originally refers to the process of modelling, carving, cutting, or engraving. It added that by availability of high technology, sculpture could now be considered as giving form to all types of three-dimensional materials. This thus covers welding, bolting, sewing, machine-hammering, and stamping. Bentum, (2009), explained further that, plastic happened to be the general term used to describe all materials used in forming a sculpture.

Sculpture is probably the earliest medium for documentation outside aural utterances. Archaeologists, anthropologists, and historians have been able to make meaning of antiquity largely from antique statuettes, statues, figurines, and architectural structures spanning across Africa to the Orient through the Occident and the Oceania. Materials for the making of sculpture have varied over the period from earliest known artefact to the modern era. Originally, sculpture was made from direct natural objects like clay, stone, wood, and ivory. As civilization expanded so did the materials that included all physical substances that have form like porcelain, metal, plaster of Paris (POP), plastic, concrete, fibre glass, even ice among others. The passion that sculpture brings within the precincts of

both private and public facilities is not in doubt. According to Ato Keelson, the sculptor of the CNC, Sekondi, and Bismark Ocran, a carver at Takoradi, (2009), the impact of sculpture on perception makes this art discipline attractive to virtually all art enthusiasts. Ebo Bentum, a Senior Lecturer of the Sculpture Department of Takoradi Polytechnic, lamented that sculpture has so many benefits that have been grouped under four (4) key factors – Bentum, (2009): history, healing, beautification, and worship.

The annals of the past that archaeologists and anthropologists have been able to deduce were largely because of antique sculpture that came from the remains of dead communities, wreckage of water vessels, tombs, temples, castles/forts, etcetera. The picturesque images from the sculpture pieces and paintings are some of the key sources from which documented evidence of life of the past were and are still being construed. The essence of history to mankind and nature cannot be over-emphasized as it has aided cultures and traditions to be continually transferred to generations and communities. Additionally, sculpture is believed to have tremendous therapeutic significance that Bentum, (2009), stated to include synthetic limbs and other body parts for orthopaedic and heart patients. Sculpture improves home décor that could tranquilize the psychologically disturbed. It has the ability to calm nerves and improve coordination, circulation, and other physiological imbalances of life. Beautification associated with interior and exterior make-up of this part of the world is often taken for granted; however, sculpture is one of the most important complement to the totality of beauty and value that edifices and the environment could endow. The interest, attention, and admiration that sculpture attracts stemming out of its grace, exquisiteness, and splendour make such places welcoming as it impact perception broadly. The sanctity and sanctuary of places of worship ever since the inception of life have been affirmed with sculpture across all religions. The spiritual

answers that people seek through sacraments have always involved sculpture. It comes in various forms to include temples, altars, vault for rituals, and deities.

Below are some images of ancient and modern sculpture:



Plate 2.5(a): Venus of Willendorf (24,000-22,000 BC)

Source: Wikipedia, (2009)

Small female statues known as Venus figurines are mainly found in central Europe and one of the earliest sculpture pieces known is Venus of Willendorf (24,000-22,000 BC), Wikipedia, (2009), as portrayed by Plate 2.5(a). The Venus of Willendorf is believed to have evolved from the area of Willendorf, Austria.



Plate 2.5(b): The First American Sculpture (1200 BC)

Source: Wikipedia, (2009)

Figures of the kind of sculpture as illustrated by Plate 2.5(b) is believed to have been introduced by America's first civilization (the Olmecs at San Lorenzo and La Venta) and have a lasting influence through 2000 years of Central American culture.



Plate 2.5(c): The Umbrellas

Source: MS Encarta Encyclopaedia, (2009)

The Umbrellas: Japan-USA, 1984-91 shown in Plate 2.5(c) was made by the Bulgarian-born American artist Christo who is noted for his large-scale environmental sculptures known as earthworks, such as the arrays of umbrellas that he conceived and began planning in 1984 and set up in 1991 in the country sides of both Japan and California. Christo's works embrace large areas, forcing his public to see. His method consists essentially of "wrapping" landscapes or large objects in a new packaging; his goal is to prove the susceptibility of contemporary consumer society to packaging. Christo's sculptures cost millions of dollars to plan and execute, and they remain standing for a relatively short period of time (Kaku Kurita/Liaison Agency).

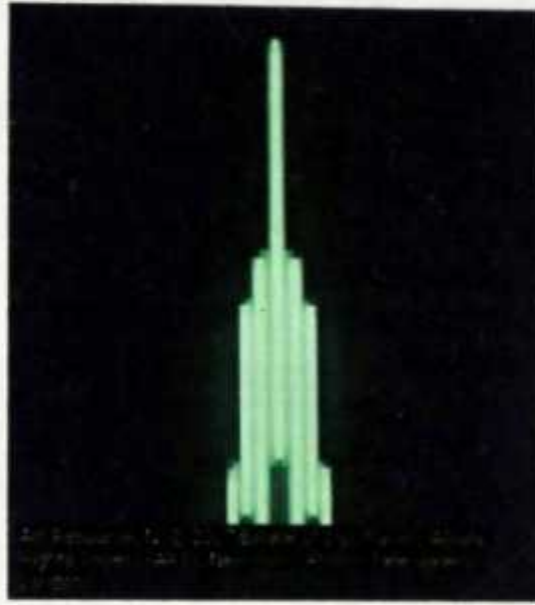


Plate 2.5(d): Monument for V. Tatlin

Source: MS Encarta Encyclopaedia, (2009)

Monument for V. Tatlin being exhibited by Plate 2.5(d) was composed by an American minimalist sculptor – Dan Flavin whose work consists almost entirely of prefabricated fluorescent light tubing. The light the tubes emit extends into the viewer's space, diminishing the distinction between the work of art and the space surrounding the viewer. Monument for V. Tatlin, created between 1966 and 1969, is in the collection of the Tate Gallery, London, England. Art Resource, NYC © 2007 Estate of Dan Flavin / Artists Rights Society (ARS), New York. Photo: Tate Gallery, London. African sculptures are made from various materials all of which depend on which part of the continent they come from.

In West Africa, most of the sculpture pieces are made from wood for good reason: the abundance of rain forest. Typical artefacts of this medium (wood) are based on subjects that relate to human beings. These carved images have long bodies, square shapes, and facial features that represent an ideal rather than a real human being. According to Bentum, (2009), the unique features of these figures attest to the fact that the concepts for such

artefacts often have religious connotations and are essential in religious and traditional rituals and ceremonies. Largely, sculptures made by the Mende people of Sierra Leone are made of wood on surfaces that are flat and broad with round arms and legs as illustrated by Plate 2.5(e).



Plate 2.5(e): Double Carved Busts on Display at a Hall

Source: Klensch, (1996)



Plate 2.5(f): Additional Display of Carved African couples

Source: Klensch, (1996)

The Mossi people of Burkina Faso had sculptures that were used ritually to represent political power and culture like the type depicted by Plate 2.5(f), Klensch, (1996). In Ghana, the Akans carve the Akuaba (fertility) dolls that are designed to reflect the plumpness of a typical female Negro. It clearly depicts the curvature of the limbs, bust, and hip like the type displayed by Plate 2.5(g). Essentially, in African mythology, the Akuaba doll is believed to promote fertility for the female at puberty or marriage. In Central Africa, the main characteristics include heart-shaped faces adorned with circles and dots. In addition to the antique sculpture that has tremendous market internationally; modern sculpture from Africa with both indigenous and exotic inspiration also command respectable demand in the market. In display are some selected samples:



Plate 2.5(g): Ibeji Doll Pair Hand Carved Wood Sculpture African Art

Source: The African Art Store, (2008)



Plate 2.5(h): A Typical Philosophical African Sculpture on Sale

Source: The African Art Store, (2008)



Plate 2.5(i): African King A Ghanaian Wooden Mask

Source: The African Art Store, (2008)

Granted the dominance of wood; however, clay, stone, metal, and ivory were also used throughout the region in significant proportions as well. The Fang people from Gabon carved full size standing figures as guardians of the relics of their ancestors. These figures are usually made by accomplished crafts people who paid attention to the fine details. According to Dr Bentum, most of the sculptors of the past were the chief spiritual leaders

(fetish priests) and often presented philosophical perception as they are espoused and interpreted from the oracles of the ancestors and gods that they served. East Africa is known for its pole sculptures. These are made out of a pole carved in the shape of a human and decorated with various eye-catching patterns to form the design. The tops of these sculptures are carved with animal figures, people, and various other objects. These poles are usually found next to gravesites and are associated with the dead. Other sculptures in this area are said to have healing powers. An example is the wooden figure used by the Pare people of northern Tanzania. Clay sculptures from Southern Africa can be traced as far back as 600 AD. The clay figures have a combination of human and animal characteristics. Other forms of sculpture found in the region were the images carved into rocks. These carvings included abstract patterns as well as images of animals and pose as a form of rock art. The various styles of the figures and sculptures found in Africa are a testament to the diversity and complexity of the various ethnic groups that share the continent, The African Art Store, (2008). A critical study of sculpture history should reveal a pattern that reflects elements of images that share semblances with African sculpture. It is for this reason that led Dr Ebo Bentum to assert that the exaggeration in West African sculpture should not be misconstrued as lack of high level artisanship. On the contrary, the academic lamented that the sculpture of this part of the world is philosophical other than ideal in that the sculptors of the past were senior fetishes who interpreted oracles of deities under whom they served. Typical examples are the images of Plates 2.5(h) and 2.5(i). By this, the images that are depicted reflected perception revealed by the deity or the ancestral world in the past. Modern sculptures of this part of the world still bear inspiration of the philosophical antiquity like the *Akuaba* doll of the Akans in Ghana.

## 2.6 Displayed Statue at Public Places

Adopting from visual merchandising, Bell and Ternus (2002) depicts display to be showcasing image shrouded with tangible and/or intangible factors that describe object, philosophy, concept, and passion. By inference, display emphasizes communication between the artist and the audience where subject of the artist gets conveyed to the latter. According to Taylor (2005), public art is the image that implicitly communicates values, beliefs, passion, trends, traditions, might, weaknesses, challenges, etcetera. to audience that commute in or around unrestricted spaces unrestricted. Collins then added, "Not to speak through the city monuments is to abandon them and to abandon ourselves, losing both sense of history and the present". Per the design of the art piece, La Palm should clearly be unmasked to visitors of the hotel as the institutional profile was captured in the entire design.

Prominent history of public art establishes through Encyclopedia of Irish and World Art, (2011), that Greek cities were early advocates of the edifying virtues of religious and social art (predominantly sculpture), capable of being viewed and appreciated by the community at large. It is obvious that the understanding of the impact public art has been appreciated by many even before the Renaissance. For remnants of Greek cities even till date espouses the economic, political and military might of ancient Greece. But undoubtedly, the greatest era for public art was the Italian Renaissance, whose artworks bridged antiquity and current civilization – the Encyclopedia of Irish and World Art, (2011), concluded.

The four images showcased combine antique and contemporary public art spreading across varied civilizations and technologies.



Plate 2.6(a): Virgin Mother—Damien Hirst, Lever House Plaza, New York City

Source: Hirst, (1989)



Plate 2.6(b): The Teletroscope

Source: Arnold, (2011)

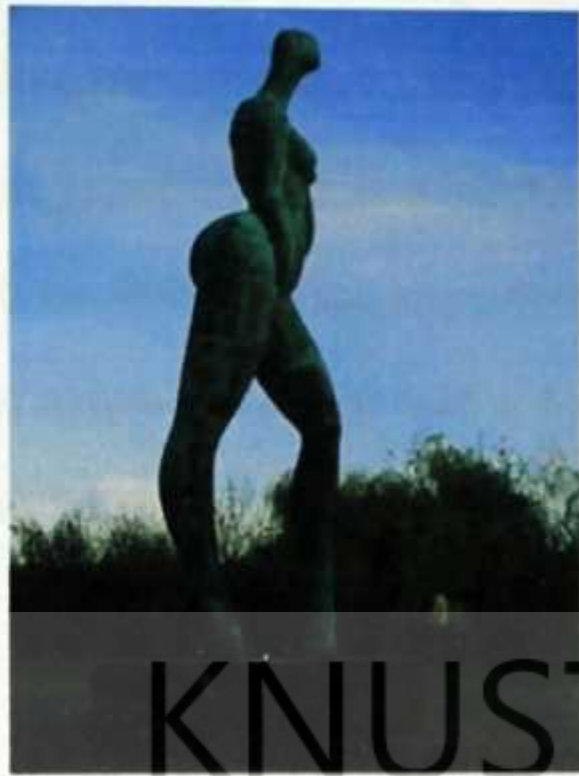


Plate 2.7(c): Standing Woman

Source: Yaxi, (2003 – 2010)

Often, sculpture is the prime impression that is pictured whenever public display is mentioned. The Stained Glass Window, St Etienne of Bourges has proved otherwise. Of interest is the Plate 2.6(a) that reflects the mystery and beauty of contemporary art for public display. Adopted from Hirst, (1989), it has been strategically sited at Lever House plaza, New York City: a very popular and accessible place for maximum attraction. Going by a curious name, “Virgin Mother” is an artefact that shall provoke intense gaze as audiences shall be urged to comprehend how a mother could conceive without sexual engagement. On the other hand, the thought of genetic engineering and test tube babies should be coming into the debate. Additionally, the “Telestocope” [Plate 2.6(b)] as depicted by Arnold, (2011), is a grand and imposing monument built between London and Brooklyn. It composites are cunning placement of mirrors through the tunnel. It enabled the people of New York and the people of London to see and hear one another, pre-dating

teleconferencing by more than a century. The story is well reinforced by the physical framing of the portal – a well-constructed Jules Verne like device that marks the tunnel mouth and frames the screens physically and as a narrative, Arnold, (2011), concluded. Yaxi, (2003 – 2010), extends the thrill with the magnificent “Standing Woman” at Plate 2.6(c) which is a monumental sculpture in copper with a ‘height of 4m and 50in located at Dagan Lo, Kunming, Yunnan Province, China for public display.

## 2.8 Effects of Weather on Public Monuments

According to the Word Web Encyclopaedia (2010), weather is the atmospheric conditions that comprise the state of the atmosphere in terms of temperature and wind and clouds and precipitation. Weathering is the process by which stones and metals are broken down over time (Time, 2012). The constantly varying climatic conditions affect virtually everything of life. Quoting from Florian, Kronkright, and Norton (1990), Florian (1981) asserted that deterioration of public art is dependent on the provided factors: different states of deterioration; different wood/material species; different physical descriptions of the artifact; different histories of the artefact's ethnographic use. The trio further added the fifth variable: different conditions imposed on the artefact after collection. In his assertion, Time (2012) argues that without intervention, even the sturdiest monuments will eventually be ground down to soil and dust by nature's elements.

Time (2012) postulates that weathering is facilitated by three key ingredients: mechanical, biological, and chemical. According to the author, mechanical weathering is the damage to art works as a result of pressure evolving from contraction and dilation. Coldness and hotness from the atmosphere, glacier, water, and tremors are the major tools for

mechanical weathering. The biological one largely emerges from activities of living organisms like vegetation growth where wild roots of plants create crevices in the work. Others include moisture, acid, and salt from materials like blood and urine. In chemical weathering, Time (2012) indicates that it is got to do with corrosive chemical materials from the environment that affects art works. He specifically mentioned acid rain which can fritter off concrete and stones.

An eHow web site quotes Volz (2012) who posits the factors below as the mechanisms for protecting public monument. She instructs that:

Saturate the monument with clean, filtered water. Using a garden hose or a pump sprayer will supply a steady but gentle stream of clean water for the project.

Scrape the monument's surface with the flat edge of a plastic scraper to remove surface contaminants such as mold, algae and bird droppings.

Soak a soft-bristled scrub brush in clean water and scrub, using light pressure, the monument surface to remove stains and dirt. Work in a circular motion, constantly moving the brush to avoid streaking or eroding the stone. Tougher stains may require greater pressure. Change to stiffer brushes only if absolutely necessary; you risk damaging the stone with rougher brushes.

Rinse the surface regularly as you scrub to check progress and ensure you are not damaging the stone. Scrub only as much as necessary to remove dirt and stains.

Mix one ounce of non-ionic detergent per one gallon of clean water if necessary for stronger cleaning power. Continue to use a soft scrub brush and rinse often as before, until you have removed dirt and stains from the stone.

Apply a consolidant to the monument's surface. These products, available through stone and monument manufacturers, penetrate the surface to fill in damage and protect from future penetration by the elements. Apply with a clean cloth, soft bristle brush or pump sprayer for best results.

Accompanying tips and warnings by Volz (2012) are as follows: follow all specific product instructions and warnings for applying a consolidant. Different products may require different application or dilution rates.

Do not apply a consolidant if it will rain within 24 hours; the consolidant must dry on the stone for proper protection.

Never clean or perform maintenance on a gravestone or monument that shows signs of damage or wear. Cleaning efforts could cause more damage than good. Consult a professional stone or monument manufacturer for help.

Supporting the need for the preservation of public art, McFarland (2012) contends that protecting a historical monument or a potential historical monument requires not just care of the monument itself, but also following a tricky legal process to have the building or object recognized as an important piece of history. McFarland (2012) continued that the essence for the preservation artefact has defended with provided elements.

Determine the historical significance of the monument. In her opinion, there are four basic criteria for inclusion in the national register of historic places: association with significant historical events, association with an important historical figure, embodiment of a particular historical architectural, engineering or landscaping style, or potential archaeological significance.

Seek additional help from any local historical societies. These organizations may have the funding and resources to aid in preserving the artefact, and may have familiarity with the national registry application process. Individuals in these organizations may also be able to help perform any research about repairs or restoration that will maintain the artefact's historical integrity.

Perform any necessary repairs to the monument, but make sure that all work performed is up to state and local safety codes while preserving the art work's historical integrity. Any work performed should maintain the art piece's historical style. Maintenance work should include cleaning the exterior and interior of the art work or object and general landscaping. Repair rather than replace any degraded original work, decoration, or fixtures. Keeping the work or object in good repair and as close to its original condition as possible will ensure that it is available for future generations.

Contact the state historic preservation office. If possible, include the property owner or a historical society in the application process. The application will require documentation of age and significance of the monument.

Promote protection of the public art in the community area. Regardless of whether the artefact is approved for the national registry, local recognition of public art will ensure that it receives the attention it deserves and needs to maintain its original look. Ask local library or city government building if there is a place where records on public arts could be kept and made available to the general public so that others can learn about such works. Ensuring that others know about the relevance of such works means they will take care to keep it intact with repairs, landscaping and future construction; McFarland (2012) concluded.

Frank (2012) ends the sub-chapter strategy for cleaning public by stating that whether it's a monument in your lawn, at a school or in a cemetery, it is important to clean it every year or so, or as you see fit when the monument collects soil and residue. Use cleaning elements that are both inexpensive and safe for the monument, as this effectively cleans without causing damage to the monument. She instructs that:

Fill two buckets with about 1 gallon each of warm water. Drizzle 2 table spoon dish soap into one of the buckets.

Dip a cleaning rag into the soapy mixture and squeeze out the rag slightly.

Wipe over the monument, using a ladder if needed to reach high areas of the monument.

Dip a toothbrush into the soapy water and scrub engravings and other small crevices.

Dip a cleaning rag into the bucket of clear water, and wipe over the entire monument again. Repeat as needed until you get all soapy residue off of the monument, and allow to air dry.

## 2.8 Principles of Fashion Design

According to (Kawamura, (2005), fashion has been explained to mean contemporary trends of dressing by given people with limited time period. The provided website:

([http://www.seasonsindia.com/beauty/funda\\_sea.htm](http://www.seasonsindia.com/beauty/funda_sea.htm), 2012), considers designing basically

to involve giving form to a particular idea by keeping into mind the different aspects of designing such as proportion, flow, balance among others. It is ultimately the end result,

which has to be seen and admired. According to Todd (2012), fashion designers who have mastered the principles of fashion design go on to create the trends.

Todd (2012) asserts that, the principles are the directions for a cake recipe and the elements are the ingredients. The directions (principles) are flexible and should be interpreted within a current fashion or problem the designer is trying to solve. Bell and Ternus (2003) established that principles of design are the rules that regulate the composition of clothing. The pair further stated that the principles of design are numerous but the applicable principles required are dependent on the discipline and objective of the task at hand. Frings (2008) perceives the following as the key principles of fashion design: proportion, balance, unity, rhythm, and focal point/emphasis.

Proportion could be explained as pleasing relationship of areas sometimes referred to as scale. The relative length of two parts of a garment is termed as proportion. The degree and method of subordinating some part of a design to other is shown as proportion ([http://www.seasonsindia.com/beauty/funda\\_sea.htm](http://www.seasonsindia.com/beauty/funda_sea.htm), 2012).

According to the three authors: Bell and Ternus (2003), Frings (2008), and [http://www.seasonsindia.com/beauty/funda\\_sea.htm](http://www.seasonsindia.com/beauty/funda_sea.htm), (2012), balance is the equal distribution of weights. Symmetry (actual or virtual) between the left and right halves of the body in clothing item is termed as the symmetrical balance. The purpose of balance is to bring a satisfying relationship between all the design parts.

Rhythm is the repeated use of lines or shapes to create a pattern (Bell and Ternus, 2003).

According to [http://www.seasonsindia.com/beauty/funda\\_sea.htm](http://www.seasonsindia.com/beauty/funda_sea.htm), (2012), rhythm is

achieved through: symmetrical designs, asymmetrical designs, radiation, repetition dominance, and isolation.

Also known as focal point, emphasis creates a centre of interest by focusing the viewer's attention on a specific area of the garment (Frings, 2008). It is basically the use of subordination in various parts in order to emphasize and highlight certain parts through the adoption of illusion ([http://www.seasonsindia.com/beauty/funda\\_sea.htm](http://www.seasonsindia.com/beauty/funda_sea.htm), 2012).

Unity means that all elements of a design work together to produce a successful visual effect. Also known as harmony, achieved when the fundamental elements of design have been used to express a single concept (Frings, 2008).

## 2.9 Relevant Fibre Tests

Fibre is usually a hair-like strand, but for the type that could fashion as textile material, there is the need to satisfy four key requirements that Kadolph (2007) has named essential characteristics. According to Kadolph (2007), the four requirements are high length per diameter ratio, flexibility, fineness, and weight per unit length. In their lectures, Crensil (2003) and Omari (2008) argued that for the former, the broadness of the fibre/yarn in proportion to the given should indicate the extent to which the material could function as textile material. The two elaborated that if the diameter can fit into the length in multiple times, then the material is thin enough to be regarded as fibre/yarn. For instance, the average silk fibre has diameter that fits the length in 33 million times. The braids were designed to have diameter of 3mm which makes them quite bulky in contrast with very

tiny materials like cotton, silk, and vicuña. However, to have had 3mm fitting almost 20 times in an inch of the braid qualifies the material as textiles.

Sackey (2002) added that, flexibility is pliability that a strand of fibre/yarn possesses. This gives the material a relaxing property that permits manipulation at any angle and facilitate the gripping and stability of the strands during spinning, twisting, weaving, knitting, knotting, stitching, and seaming. Per the above definition, the braid could be said to be reasonably flexible as manipulation into varying form is upheld without hindrance: a phenomenon experienced when constructing the apparel. It is thus fair to say that requirement for twisting, stitching, and seaming were met. Fineness, another essential characteristic is determined by the formula  $L \times B$ ; where L is length and B is breadth (Crentsil, (2003) and Omari, (2008). In other words, if the area ( $L \times B$ ) of the fibre/yarn is very small, then possibly, the item must have been fibre, better still; yarn. Total length of braid used for the research amounted to 30m and if 1m is equivalent to 100cm, then, it could be concluded that total braid length was 3000cm and hence, 30,000mm. Therefore,  $3\text{mm} \times 30,000\text{mm} = 90,000\text{mm}$ . The figure from the product is indicative that the braid was fairly fine even but had some coarseness because it was quite bulky.

In reference to Kadolph (2007), weight per given length could be determined by the

provide formula: 
$$\left[ \frac{\text{weight of an inch of yarn}}{1} \right]$$

Per the formula, should the outcome of the weight for an inch of fibre/yarn divided by 1 provide a minute figure, then the material is tiny and hence, could be adopted as fibre/yarn.

The entire apparel weighed a little above 5 ounces implying that an inch of the braid should be of weight that was infinitesimal. By this, it could be concluded that the material was indeed feasible textile material.

However, in support of Sackey (2002), there are many items that appear to the hair-like strand feature but not all qualify to be considered as textile materials. According to Sackey (2002), additional factors to consider are availability, commercial viability, and properties regarding end use. Actually, it is the latter that shall guarantee the satisfaction required for the end use. Kadolph (2007) the listed the properties to include tensile strength, resilience, comfortability, drapery effect, absorbency, good dye affinity, lustre, mildew effect, and hydrophobia.

Concluding the chapter, state of Ghanaian textile/fashion industry basically accounted for the inception of textiles and fashion as ancient craft and thence, to modern art. Production, marketing, and challenges of the industrial sub-sector were treated drifting it to the prevailing trends. Following the above was diversity, innovations, and efficiency of textiles and fashion that was designed primarily to use knowledge, technology, and time to adopt indigenous materials for making clothing which should have local and international appeal and attract significant financial rewards. Competition is seen by many a business person as threat but it is also a chance to develop efficiency and effectiveness and one of the best ways to achieve this was to broaden horizons of business by venturing into areas that hitherto were untapped. The leverage from this is believed should lead to the growth of the sub-sector securing its presence and dominance in the market.

‘Judicious and Productive Use of Waste as Unconventional Materials’ analyses of others in various parts of the world who had used materials that otherwise were discarded as effective resources for productive use were largely the composites of the alternative local materials for the local textiles and fashion industry. It should drive the need to make relevant use of anything that is destined for the land field. Waste management has become

albatross for the MMDAs as it is widely believed that over 70% of their budget goes into waste management in Ghana, Vanderpuje, (2010). Its socio-economic impact is so wide and has the potential to run a government down. Dumping of refuse into deep land fields has been found to be not too prudent for its repercussions on the environment could be catastrophic. In many nations, alternative uses of waste are being developed with some having statutory support. It is for this cause that the sub-topic became relevant in making a case for recycling likewise finding different and varying uses for materials that otherwise would have been taken for wastes.

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Also dealt with in the chapter is textile art as an alternative in the broader textile/clothing industry. It depicted picturesque impressions of related textile arts from other authorities of the discipline. Even though the type of artefact which is at the centre of this exercise is a novelty, the sub-chapter revealed the extent to which textile art as a discipline has become prevalent. Next was the art of sculpture which talked about sculpture as an art discipline. It reflected the history of this art and made a case for its place in modern art industry. Also considered, was how creativity and versatility could be adopted in fabricating future sculpture as this research has done with the combination of textiles and fashion to create new artefact. Further point tackled is the 'Displayed Statue at Public Places' which sought to find out artefacts showcased at public places. As part of the presentation, assorted and varying monuments exhibited were discussed and demonstrated. Like that of textile art, the fundamental object of this point led to the discovery of the impact of various aesthetic appreciations of textile art on public places. Adding to the above, professional impression of management and preservation of public monuments was extensively analysed to facilitate care and maintenance against wear and tear.

Beyond, 'Principles of Fashion Design' looked at feasible factors for composing innovative and inventive clothing that are efficient and effective. The chapter ended with 'Relevant Fibre Tests' which essentially considered the significance of identifying and determining the characteristics and properties of fibres/yarns for particular clothing as mechanism for producing functional costume.

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## CHAPTER THREE

### RESEARCH METHODOLOGY

#### 3.0 Research Design

Research design has been explained by McMillan (2008) as the plan for carrying out a study. By design, this exercise adopted the qualitative approach based on grounded theory principles. Qualitative research method focuses on understanding social phenomena from the perspective of the human participants in the study (Ary et al, 2006). The authors also indicated that data are collected in natural settings, and the research aims at generating theory rather than testing theory. According to Marczyk, Dematteo, and Festinger (2005), qualitative research involves studies that do not attempt to quantify their results through statistical summary or analysis. It typically encompasses observations and interviews without formal measurement; the trio concluded.

To have had the core of the study centred on observations and interviews, qualitative research was employed. Actually, virtually no quantitative instruments and analyses were engaged in the investigations and analyses.

#### *Rationale for the Use of Qualitative Design*

Qualitative research is concerned primarily with process, rather than outcomes of products. As regards the work at stake, perfect detail at every level from the design composition to artefact manufacture was harmonized with the specifications determined from the customer profile.

Also, qualitative research is interested in how people make sense of their lives, experiences, and the structures of the world. It could be concluded that total personality of the client should reveal the temperament, preferences, status, interests, and hobbies and how these factors interrelate with the environment of the client. This also marks the essence of the customer profile.

The qualitative research is the primary instrument for data collection analysis. Evidently, the study commenced observation and surveying across the environment to ascertain the feasibility of embarking on such a cause. Beyond, books, likewise experts in the field of research were consulted to gather credible data for the publication. For verification and validity, interviews and fact findings from authorities on the subject matter were engaged adequately.

For verifiability and validity, qualitative research involves fieldwork. The researcher physically went to the people, setting, site, or institution to observe or record behaviour in its natural setting. The mechanical engineering laboratory facilitated testing of the braids to determine its viability as textile materials. Parts of the statue were cast and carved respectively at the Sculpture section of KNUST where resources were sourced easily and expert guidance was sought from expert sculptors were immeasurable.

By nature, qualitative research is descriptive in that a researcher is interested in process, that is, understanding gained through words or pictures. As a matter of fact, customer profile, idea development, design, and specifications as presented in this report could be placed under the domain of qualitative research for the former made use of graphical images and illustrations as espoused by the above factor.

The process of qualitative research is inductive as the researcher builds abstractions, concepts, hypotheses, and theories from details, Merriam, (1998). It is obvious that conventional natural textiles has been over-employed making taking away its excitement. Besides, the indigenous local textile industry is doing any better. The novelty of textile art is becoming appreciated earnestly and steadily. What is more, phenomenal excitement of sculpture is not in doubt; hence, merging the impact of fashion, textiles and sculpture in a new dimensional art as an alternative for discussion into conventional artefact became the core subject of this exercise. It aimed at description, experimentation, manipulation, analysis, and interpretation of converting the corn husk and plantain leaf into textile art to achieve appealing results worthy of assessing qualitatively. On this account, the researcher made use of the following approaches: descriptive and experimental research methods.

### ***3.0.0 Descriptive Research Method***

Descriptive research is used when the objective of the research is to provide a systematic description that is as factually and accurately as possible. It provides data about the population being studied; however, it can only describe the: "who, what, when, where and how" of an existing situation. One of the major limitations of descriptive research is that it cannot establish a causal relationship between variables. Marczyk, Dematteo, and Festinger, (2005), intimates that, descriptive research refers to the process of defining, classifying, or categorising phenomena of interest. Trochim (2001), practically puts it as studies designed primarily to describe what is going on or what exists. Further definition from Sharp and Howard (2000), regards descriptive research as the type where emerged conclusions are based solely on experiences related to the variables under investigations.

As regards the above, the researcher found it appropriate to utilise this method since it offered opportunity to describe, analyse, and interpret data gathered. The logical, systematic, and cohesive procedures followed in coming out with the entire work were made possible per appropriate application of this research technique.

### **3.0.1 Experimental Research**

Possibly, the most simpler and exciting of the methods was the experimental research; it explains why the researcher can most convincingly identify cause-and-effect relationship. In this design, the researcher considers various possibilities likely to cause or influence a particular phenomenon. In experimental research, the investigators have control over one or more factors in the study that may influence the subjects' behaviour (McMillan, 2008). According to Ary, et al (2006), experimental research involves a study of the effect of one variable(s) on another variable. Similarly, Best and Kahn, (2006), asserts that experimental research describes what will be when certain variables are carefully controlled and manipulated. Experimental research designs are founded on the assumption that the world works in accordance with causal laws. The main objective of experimental research is to establish these cause-and-effect laws by isolating causal variables. A softer view of the philosophical assumptions behind experimental designs is that sometimes and in some ways, the world works in accordance with causal laws. Such cause-and-effect relationships may not be a final view of reality; however, it demonstrates that cause and effect are useful in some circumstances. Both of these views agree that some (if not all) important psychological questions are questions about what causes what.

The above research mechanism became visible during the testing for the properties and feasibility of the braids likewise the artefact production. During the testing of the braids, varying moisturizing temperatures and stress were tried to determine and verify the extent to which the materials could function as fibrous materials. Also, throughout the artefact production, areas that could not conform to the specifications of the customer profile were replaced with alternatives that were feasible.

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### 3.1 Population of the Study

Population is a term that refers to the complete set of individuals (subject), object, or events possessing common observable characteristics in which the researcher is interested. Population does not necessarily mean people (Agyedu, et al, 2007). It constitutes the target of study and must be clearly defined and identified. Before one commences any data collection, one needs to explain clearly who and what the population will include. Population may be either definite or indefinite. With definite population, its members (elements) can presumably be counted and a definite number obtained, for example, students of a particular polytechnic. With indefinite population, the element of the population cannot be definitely known, for example, bats of Kumasi zoo. The target population of this research was Takoradi, Accra, and Kumasi Metropolis. This encompasses departmental and sectional heads of Holiday Inn and La Palm Royal Beach Resort of Accra; staff of Centre for National Culture (CNC), Takoradi, and then some lecturers of the Sculpture Sections of Takoradi Polytechnic and KNUST.

### 3.2 Sample Size

Population may vary in size: some are small and others are big. The researcher therefore needed to take a decision whether every element of the population must be included in the study (census) or some of the members be selected (sampling). Therefore, sampling is a subset of the population and comprises individuals, objects, or events that form the population. There are so many types of sampling selection procedures and that include cluster, systematic, convenience, quota, stratified random, proportional random, simple random, etc. However, the researcher employed judgment or purposive sampling for this study. According to Ary, et al (2006), in purposive sampling, sample elements judged to be typical or representative are chosen from the population. William Sealy Gosset in 1915 is known to have developed data on the probability distribution of small sample (Best and Kahn, 2006).

The representatives of the sample are determined solely by the judgment of the researcher. Since each member in the population does not have an equal chance of being chosen, a judgment sample is also a non-random sampling method. On this basis, the researcher selected the Head of Reception at Holiday Inn, Accra and then, three heads of department at La Palm Beach Resort. Beyond, three further lecturers from the Textiles Section, six lecturers from Sculpture Section, and one lecturer from Mechanical Engineering Department of KNUST were consulted likewise. Additional two lecturers of Fashion Department and one lecturer from Sculpture Department were engaged at Takoradi Polytechnic. Other members involved were two technicians of Mechanical Engineering Department of KNUST and two Sculpture Teaching Assistants of KNUST as well as four

students of the Fashion Department – Takoradi Polytechnic. Finally, one carver and sculpture trader and one sculpture expert of CNC, Takoradi did provide information too.

### **3.3 Data Collection Instrument (Research Tools)**

Usually, every professional has unique equipment and/or tools for carrying out intended work. The tools are apparently chosen to facilitate the task to be accomplished and are indispensable if the job really needs to be done. Similarly, researchers have their own special tools for the execution of plans towards the achievements of established goals. Per the actual collection of data, the researcher used interviews with questions drafted from questionnaire as the main tool in addition to observation and documentary consultations.

#### **3.3.0 Individual Interview**

The individual interviews with which data was generated for this study were semi-structured between the interviewees and the researcher around the theme, “Unconventional Textile Fibrous Materials for Costume on Monument.” According to Kvale, (1996), an interview is literary: an inter-view, that is inter-change of views between two persons conversing about a theme of mutual interest. This human interaction is designed to establish knowledge about how people understand the world, their beliefs, and actions. Individual interviews vary according to content, such as seeking factual information, opinion or attitudes. In reference to Trochim (2001), the interviewer in individual interview has the opportunity to probe or ask follow-up questions, Interviews are generally easier for respondent, especially if information being sought is about opinions or impressions. This

makes room for question modification to follow the line of conversation in an informal interview. An interview as a research tool may range from structured interviews, in which questions are asked and the answers are recorded on a standardized schedule. Kvale, (1996), asserts that semi-structured interviews differ from structured interviews in that there is certain openness to changes of sequence and forms of questions. An attempt was made to obtain detailed description of specific situations and actions as well as the meaning of the described phenomena.

Preceding the interview, tailored questions to elicit valid and verifiable information were constructed. The researcher made use of closed-end questions as well as open-end questions. Closed ended question is a type of question you should consider even if you are hand tabulating your data. A closed-end question lists possible answers from which the respondent picks out of the provided alternatives the answer that is most preferred. An example is the common multiple-choice question. The open-end question is the type of question that the respondents write the answer out of reason and intuition and expresses it as such without definite limitation as seen in closed-ended questions.

### **3.3.1 Observation**

Marinossou, (2002), points out that there is a world of difference between observations and seeing. He argues seeing as creating order out of the chaos of signals reaching the brain, gleaning information from the environment by placing significance of some things, making out of a situation, even noticing the absence of things and being aware of in-built ones. An observation on the other hand is the result of looking and seeing while interpretation is based on the observer's assumption, Spradley, (1980). Observation, therefore, offered the

researcher opportunity to look at what is taking place in the situation rather than at second hand. This gave the researcher a clear picture of the study area. Observation enabled the researcher to see things that might otherwise be unconsciously missed, to discover things that interviewees might not freely say in the interview and thereby moving beyond perception-based data.

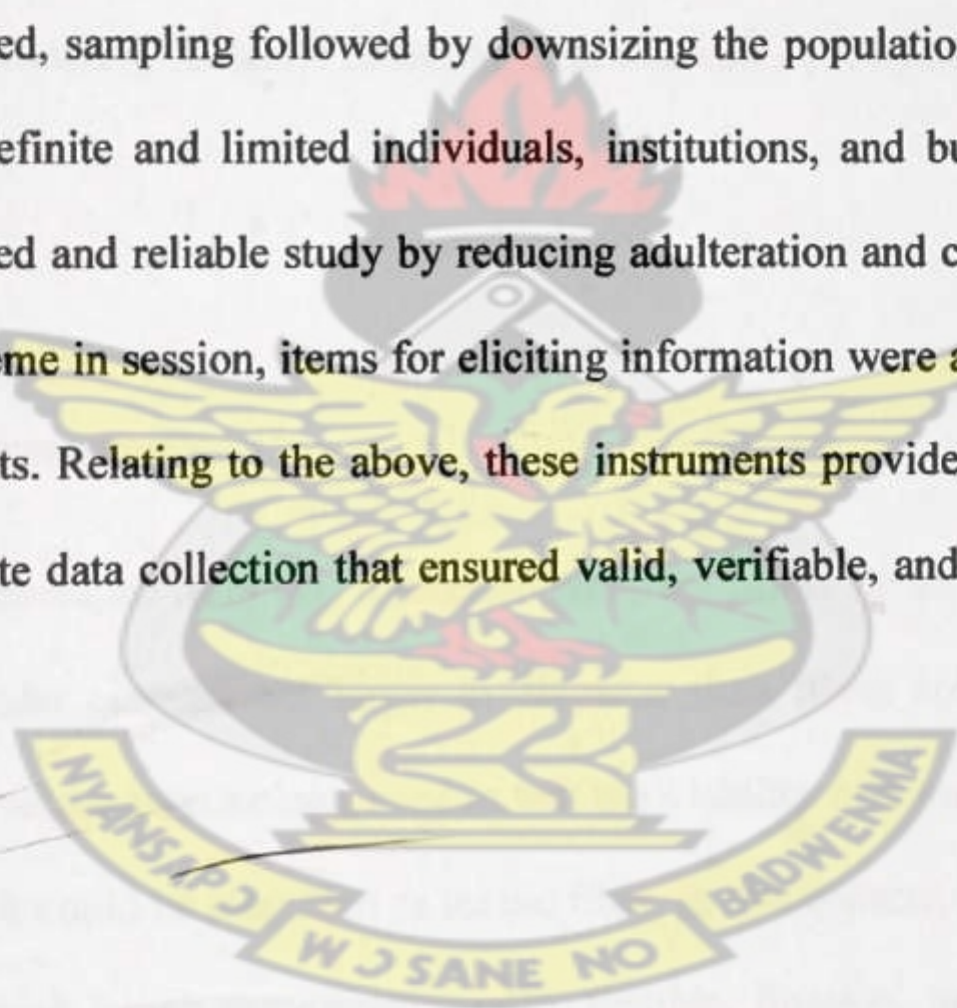
It is perceived that observation gives the researcher the opportunity to gather data on the following factors. The first is physical settings of the people, which is physical environment and its organization. It also provides the human setting of the people, that is, the organization of the people, the characteristic, and makeup of the groups or individuals being observed. Finally, it comprises the intersectional setting (that involves the interactions that are taking place, formal, informal, planned, unplanned, verbal, and non-verbal) for example, the researcher observed the lobbies of Holiday Inn, La Palm Beach Resort, and National Theatre (Takoradi) to determine the acceptable form of artefacts for display and the pattern of display. Impact of the artefacts on the premises, staff, and most of all, guests much as economic sense was equally deduced.

### ***3.3.2 Documentary Consultation***

The researcher selected and read texts, reports, journals, magazines, catalogues, lecture notes, radio/television addresses and deliveries, reports from the internet, government publications, press releases, and personal experiences to gather information on fibrous wastes, innovative textiles/fashion, sculpture, and the economic conditions of Ghana as well as the extensive use of CAD through the Adobe Photoshop software and digital camera. Generally, all the above provided vital sources of information in contextualising

this research. Yin, (1994), notes that systematic search for relevant documents and records play an important role in any data collection plan.

By conclusion, the chapter discussed the spectrum of research design which principally revolved around planning and organising structures ahead of the investigations. Adequate preparation preceding the inquest was a major asset as it kept the project focused and reduced haste and waste. Target population centred on specific individuals, institutions, and businesses to form the demography of the research. The essence was to access data that had tremendous credibility and substance aiming at reliable conclusions. With target population determined, sampling followed by downsizing the population in the identified demography. The definite and limited individuals, institutions, and businesses engaged were to ensure refined and reliable study by reducing adulteration and conjecture. Having had the broader scheme in session, items for eliciting information were applied under data collection instruments. Relating to the above, these instruments provided the capacity for adequate and accurate data collection that ensured valid, verifiable, and fair analyses and findings.



## CHAPTER FOUR

### TESTING, ANALYSES, AND FINDINGS OF EXPERIMENTS WITH CORN HUSK AND PLANTAIN LEAF

#### 4.0 Fibre Structure Analysis

The effective performance of a fabric and apparel is dependent on the properties of the fibre. By this, a textile fibre from the beginning could aid in determining possible future uses before conversion into usable materials. Fibre structure analysis sought to basically determine the potential uses of textile fibres through the characteristics and properties as determined by the following factors: 'Essential Characteristics', 'Physical Structure', and 'Chemical Structure'.

##### 4.0.0 Essential Characteristics

Textiles is usually developed from tiny molecular elements called fibres from which yarns (another tiny molecular element but larger in diameter than fibre) are made. **Essential Characteristics** is a textile terminology used to test the viability of a material to establish the extent, to which it could be classified as textile fibre, in this context, yarns. It uses four principles listed as high length per diameter ratio, flexible, fineness, and length per unit weight.

Extract from Kadolph, (2007), claim that, one common feature that characterizes all textile fibres and even yarns are the fact that the total length must be hundred times the width. Furthermore, the documentations stated that it is this indispensable pre-requisite that enables fibres to be twisted together to form a yarn or thread. The smaller the ratio of

diameter to yarn, the finer the fibre or yarn is and the vice versa results in coarser fibre or yarn as in the newly innovative yarns being introduced. The test material in question was a strand of braided corn husk and plantain leaf with an area of  $3.5\text{mm} \times .10\text{mm}$  and thus could be said to be a fibre or yarn in this context as  $3.5\text{mm}$  is fairly small.

Flexibility could also be referred to as pliable or ductile and hence, it symbolizes the condition where the material is strong and has relative movement. The extent of flexibility and strength allows the material(s) to withstand extreme stress from twisting and braiding. It also allows the braids to lie in place without unravelling, Elsasser, (2005), also indicate that, flexibility permits cohesiveness during the fibre, yarn, fabric, and even apparel formation as well as enhances inherent stability and drapery effects of apparel and upholstery. Yarns made from the braids have tremendous amount of pliability as it could withstand the stress from multiple movements at all angles. By the virtue of this, it could be identified as ductile and as such, flexible.

For a fibre to pass as a textile material, another characteristic feature endowed is fineness. From Kadolph, (2007), fineness is thinness and lengthiness of the material. Having the material appearing as a hair-like strand affords it the chance to hold and grip each other during twisting and braiding. Mathematically, it should have a radial proportion inversely related to the length. By this, a longitudinal division of a fibre strand should produce a rectangular shape. The smallness of the area ( $L \times B$ ) of such shape is an indicator of the fineness of the material. Silk, dubbed as the queen of fibres and until recently beaten to that status by Vicuña is recognized as such largely based on the fact that the percentage of its diameter to the length is about 33 million for the average fibre. Even though the twisted

corn husk and plantain leaf do not enjoy such outstanding thinness, it has enough to make it suitable for gripping themselves in yarns, fabrics, and apparel.

The length per unit weight is one of the mechanisms used in determining the fineness and drapery characteristics of a fibrous material. In other words, if an inch of a fibre or yarn is weighed and the result is divided by one (1); and it produces a very small figure as the result, then the fibre or yarn could be labelled as yarn  $\left[ \frac{\text{weight of an inch of yarn}}{1} \right] = n$  grams: where  $n$  grams is the answer to be derived. From the formula, the weight of an inch should be very small attesting to the fact that the of corn husk and plantain leaf were quite tiny.

The above represents the standardized characteristics that are required to conclude the feasibility of the braids as yarns for textile materials. Correlating the analysis above, it should not be far from right to sum up the investigations that the yarns obtained from braided dried corn husk and plantain leaf were suitable for making fabrics for the monumental apparel. The real limitation was calculating to determine proportions of the diameters to the lengths such that, it will not be too large to reduce the fineness and flexibility of the strand for less rigid drapery effects.

#### **4.0.1 Physical Structure**

Upon examination, the outward appearances of both corn husk and plantain leaf appear web-like but bear obvious differences. Other similarities and the differences of corn husk and plantain leaf have been subjected to further scrutiny subsequently.

### ***Corn Husk***

The fibre of the outer membrane formation of the corn husk interconnects with each other creating a sheet-like material. The corn husk has parallel uneven strokes drawing from one end to the other. The strokes appear bigger from the top edge of the cob and narrows down at the bottom of the cob. If cut longitudinally, an uneven line of fibre is revealed: this fibre does not stand in unison anyway as it is interconnected with the others in the sheet. If divided in cross-section, adjoined spots that are fairly circular are revealed. The size and smoothness of these spots are uneven re-iterating the irregularity of the parallel patterns that form the web to complete the husk. Characteristically, the fresh corn husk appears pale green and darkens as the plant matures. At maturity, the moisture contents get transpired and the colour turns into lighter beige.

### ***Plantain Leaf***

The plantain leaf also appears to be webbed like the corn husk. Again like the corn husk, the plantain leaf appears irregular but relatively glossy when dry. Fresh plantain leaf is green, succulent, and juicy. Unlike the corn husk, the plantain leaf is connected to the roots. Actually, the plantain stem virtually intersects the leaves and the roots at the base of the plant. As matured leaves wither and get replaced by younger and fresher nodes, the older ones lose their water contents and shrink. The bright green colour turns into dark brown with patchy dark maroon and black shades intermittently placed. If overly dried, it becomes brittle and with little twists, the material simply disintegrates. This equally applies to corn husk but the breakage here is slightly less harsh than the former. In a longitudinal view, the plantain leaf looks quite awkward but lengthy. It is thick layered

especially, if at the base which is nearer to the roots but lighten as it approaches the real leaf. In relation to the corn husk where micro-fibres are seen running parallel in the web, a rather compact sheet is seen in the plantain and it only gets disintegrated if retted or subjected to other forms of pressure. At the cross-section, the plantain leaf shows a chain of connected web with sporadic spots which are fairly circular and differ in sizes. In between is a strong mesh that forms the web sheet.

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## 4.0.2 Chemical Structure

As stated earlier, the chemical composition of corn and plantain plants are as listed: carbon, hydrogen, and oxygen. Referring to Crentsil, (2003) and Omari, (2009), plant fibres have chemical composition of carbon, hydrogen, and oxygen in the ratio of:  $(C_6H_{10}O_6)_n$  where  $n$  is a constant factor. It is so as  $n$  remains the only varying variable that differentiates individual vegetable fibres. Sadly,  $n$  could not be obtained as in 2009, Adusei-Akouwah (2009) of Seed Technology Unit, CRI – CSIR, Kwadaso, Kumasi, indicated that apparatuses for such determinants are unavailable in Ghana. The chemical composition in the ratios presented portrays the presence of carbohydrate cellulose. Other fibres that share in this chemistry are cotton, jute, linen, and other vegetable fibres. To all intents and purposes, the existence of carbohydrate cellulose also attests to the fact that dried spun corn husk and plantain leaf are vegetable materials, better still fibres.

Carbon has been defined as an element which is a constituent of all organic compounds (IFIS, 2005). From MS Encarta Encyclopaedia, (2009), carbon is a non-metallic chemical element, known by the symbol C, which is the fundamental building block of materials in living organisms and is important to many industries. Carbon occurs in nature in nearly

pure form in diamond and graphite. In further elaboration, the Britannica Encyclopaedia, (2010), adds that, carbon is widely distributed as coal and in the organic compounds that constitute petroleum, natural gas, and all plant and animal tissue. Many of the materials that are used in everyday life contain carbon-rich organic compounds. For instance, clothing is made of organic compounds - either natural fibres, such as wool, silk, or cotton; or synthetic ones, such as nylon or polyester.

MS Encarta Encyclopaedia, (2009), again considers hydrogen as a chemical element that exists as a gas at room temperature and symbolized on the periodic table by H. Hydrogen gas is odourless, tasteless, colourless, and highly flammable. The earliest known important chemical property of hydrogen is that it combines with oxygen to form water ( $H_2O$ ); indeed, the name hydrogen is derived from Greek words meaning "maker of water" by a French chemist Antoine Lavoisier, Britannica Encyclopaedia, (2010). Plants use nutrients obtained from soil to build the cells and tissues needed for growth. Nutrients that plants need in large amounts, called macronutrients, include oxygen, hydrogen, carbon, and an array of minerals. According to IFIS (2005), hydrogen is extremely abundant and combines readily with other organic or inorganic elements in the environment.

Oxygen is a colourless, odourless, and tasteless gas essential to living organisms, being taken up by animals, which convert it to carbon dioxide; plants, in turn, utilize carbon dioxide as a source of carbon and return the oxygen to the atmosphere, Britannica Encyclopaedia, (2010). As part of its publicized version, MS Encarta Encyclopaedia, (2009), indicates that in earth's crust, oxygen is more abundant than any other element. According to Dr. Philip White, of the Rockefeller Institute for Medical Research at Princeton, New Jersey, if tissues received a sufficient supply of oxygen they would

continue to grow but the cells would not differentiate. However, when oxygen starvation was intensified, the undifferentiated mass of tissue proceeded to produce small leaves, supported on small stems. Oxygen is essential for respiration in animals and aerobic microorganisms, produced by photosynthesis and it is a common substitute of organic compound (IFIS, 2005).

#### 4.1 Biological Test

This was a test done to determine the original source and the impact of man, domestic animals, bacteria, and fungi on the corn husk and the plantain leaf. Since both corn and plantain are crops, fibres from them surely should pass for vegetable fibres. Being vegetable materials also make corn husk and plantain leaf as put by Florian, Kronkright, and Norton, (1990), pp. xi and 1, predisposed to biological processes that cause attacks through fungi, moulds, bacteria, insects, rodents, and ruminants. The biological process according to Britannica Encyclopaedia, (2010), is about the fact that the progressive changes in size, shape, and function during the life of an organism by which its genetic potentials (genotype) are translated into functioning mature systems (phenotype). Actually, the biological process occurs spontaneously in all situations but for the braids, moisture and heat could serve as catalysts; for if wetted and kept under warm and humid conditions, facilitation of the biological process should be enhanced. They may result in loss and weakening of original materials and structures, staining, distortion, and loss of ethnographic deposits, Florian, Kronkright, and Norton, (1990), pp. xi and 1.

#### **4.1.0 Corn Husk**

Based on the investigation, corn husk reacted with moisture under warm and humid conditions. The corn husk moulded turning into greyish-black patches with white spots. The major difference is the fact that, the pale colour of the corn husk makes it more discerning when damaged by fungi and bacteria. Also, it emits odour that is not too pleasant to perceive. Soggy conditions shall lead the corn husk to rot even if it does not rot, it develops unstable texture that leads to poor braid construction. If braided corn husk is soaked adequately, all the twist shall be loosened and the braids shall unravel. Additionally, many insects, caterpillars, rodents, and ruminants do find the corn husk a delicacy and thus, consume it as meal if not well preserved. If exposed to direct sunshine, the corn husk gets discoloured in high temperatures and the woody outer membrane gets frittered off. If such conditions happen before braiding, compatibility of the twist is reduced as any effective twist shall lead to wearing and tearing of the corn husk leading to weak and dishevelled yarn formation. For humans, corn husk irritates when contact is established with the human skin. This is enhanced when the corn husk is bone dry. As stated earlier, the corn has limited lustre in contrast to the plantain leaf but the natural pale colour of the corn husk makes it more visible. As such, excretion from man and animals as well as other bodily fluids like blood, tears, saliva, phlegm, and semen can stain the braids visibly.

#### **4.1.1 Plantain Leaf**

From the tests, it was observed that, the dried plantain leaf moulds with poor odour under warm moisturizing conditions that are facilitated by fungi and bacteria. Insects, especially

caterpillars, then, rodents, and ruminants may nibble the plantain leaf too as they might find it edible. In excess water condition, the woody materials (corn husk and plantain leaf) rot. This process breaks down the woody outer membrane and later, the inner cells to get the entire material to disintegrate into minute particles and then washed away. Growth of mildew is however restricted if there is adequate aeration. Too much of heat shall cause bone dryness from shrinkage that causes the textiles to harden into brittleness and break into particles under little stress. This impedes twisting and braiding as the materials disintegrate into pieces when subjected to little pressure. Where braiding is already completed before the bone dry conditions set in, the outer membrane of the braids shell off weakening the tenacity of the braids and leave behind a coarse texture that is not so pleasant to perceive. It also reacts harshly to the skin if shuffled against the skin; the overly dried fibres/yarns could scratch the surface of the skin to form minor injuries. Excretion from man and animals as well as other bodily fluids like blood, saliva, and semen can stain the braids too.

In sum, fair amount of heat and dryness with average humidity (as in normal room temperature) is the best as it stabilizes the form of the textiles (corn husk and plantain leaf) especially during twisting to make the braids. It reduces strain and stress during twisting and braiding as well for it enhances flexibility of the fibres and yarns allowing better grip and resilience of the yarns.

## 4.2 Physical Test

Physical test is examination to find the texture of the materials from sensual observation. It involves the use of perception from seeing, hearing, smelling, and feeling.

#### 4.2.0 Corn Husk

Dried corn husk is off white and yellow (creamy-yellow) in colour with patchy lustre at the wrong side when perceived with the eyes. It looks dry and light. It has height that could extend just above 1ft. It appears coarse, rough, and hairy on the right surface with parallel vertical strips laid lengthwise. At the under, it rather has fairly smooth and glossy texture. Corn husk over the cob looks compact and conical but when separated from the cob, it looks light and gently curved as illustrated by Table 3.

Table 3: Braided Corn Husk

Dried Corn Husk		
Lengthwise Observation	Cross-Section Observation	Longitudinal Observation
Web-like but disintegrate into hair-like strands when wriggled	Thin webbed thread-like pattern with uneven spots	Light rough thread like pattern

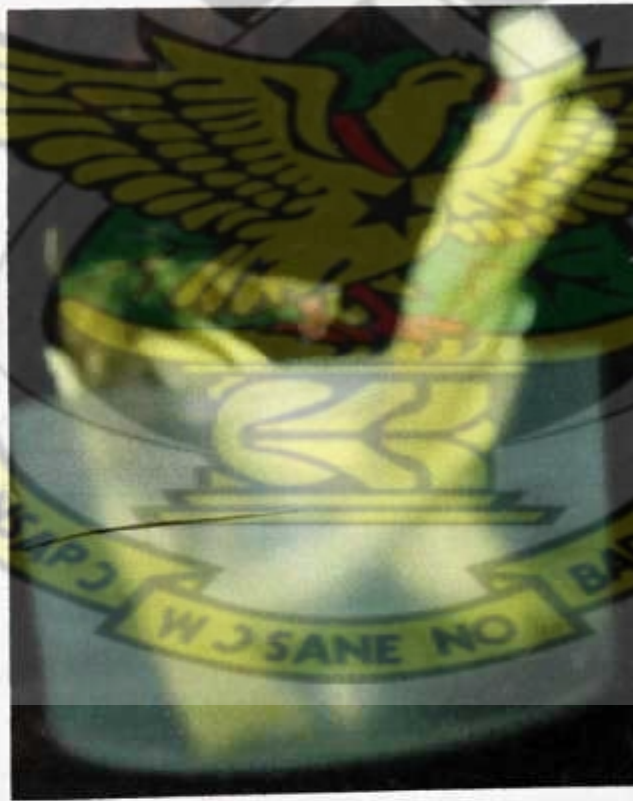
Source: Field Data (2010)

Beyond, absorption test was used for analysing other physical features of the corn husk as shown by the Plate 4.2(a):



**.Plate 4.2(a): Receptacle of Water (at room temperature) Containing Braided Corn husk and Plantain Leaf**

Source: Field Data, (2010)



**Plates 4.2(b): Braided Corn husk and Plantain leaf in water at 100°C**

Source: Field Data

Corn husk is relatively absorbent but, it is volatile and weak when wet and the braided corn husk easily unravel under such conditions. The speed of the unravelling is enhanced if hot water is adopted. When very dry, piercing of needles through sewing manually and mechanically causes both braids to wear off if they are bone dry. The corn husk in particular could be very itchy and create sensitive bodily irritation that is unpleasant and uncomfortable. Very dried corn husk is quite harsh and could irritate the skin of humans upon contact. The volatility of the corn husk makes it convenient to be coloured with printing pastes where the goods do not necessarily have to be wetted that much. It is advised that where both braids are in joint use, printing pastes should be preferred in contrast to dyeing so as to avoid disturbing the stability of the corn husk.

#### 4.2.1 Plantain Leaf

The plantain leaf on the other hand is naturally brownish-grey in colour. In some instances, it appears a little pale or dark looking almost black. At the right side, it has light glossy look where as at the wrong side, it appears checked as though it must have been woven. It looks rigid and lightweight if felt with the palm and smells like dried leaves. It also smells like peeled unripe plantain and could attain lengths of up to 13ft. If wringed briskly or subjected to severe blows, it disintegrates into tiny components. In addition, when wringed, it creates sound like the pounding or treading of dry straw. The Table 4 below shows microscopic view of the plantain leaf.

Table 4: Plantain Leaf

Dried Back of Plantain Leaf		
Lengthwise Observation	Cross-section Observation	Longitudinal Observation
Web-like but disintegrate into hair-like strands when wriggled	Thin webbed thread-like pattern with uneven spots	Thick rough thread like pattern

Source: Field Data (2010)

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Ideal dried plantain leaf for textiles should appear even in weight and size. Its lengthwise structure should have uniformity so as to achieve evenness during braiding. In many instances, it is difficult to obtain ideal form from the plant, so it is advised that, a pair of scissors is used to prune and shape the material before chopped into strips for twisting and braiding. If very dry, the outer membrane of the plantain leaf fritters off and this process is expedited when subjected to mechanical effect like sewing with needles from both manual and electric machines.

When wet, the plantain leaf relaxes and unlike the corn husk, become more extensible and elastic. It has also been deduced that the plantain leaf has good affinity to colorant. The plantain leaf has better affinity to natural dyes, vat dyes, and reactive dyes as well as printing paste. The glossy plantain leaf is a broad sheet that has patchy shades of brown indigo and black spots intermittently spreading across.

Conclusions from the physical examinations point to the fact that the corn husk and the plantain leaf cannot stand out as fibres with minute strands as in the case of cotton, wool, rayon, polyamide, among others. These (corn husk and plantain leaf) are webbed materials

that reveal their textile nature upon being converted to yarns through braiding. Both materials are very strong but coarse. These materials have inadequate elasticity thereby making them unsuitable for athletic and swimming activities for they have the tendency to impede movements of the limbs during manoeuvring. The bulky and coarse nature of the braids make it inconvenient to be worn on the human skin, as friction evolving from the body movements shall cause shuffling that can corrode the top layer of the skin. This is also the main reason why the artefact being designed is to be clad on a monument. Additional reason is based on the advice from Adusei-Akowuah in 2009 who said that, remnants of fertilizers, herbicides, weedicides, pesticides, and other harmful atmospheric gases could settle on the materials. According to Adusei-Akowuah since the materials have not been scoured; the tendency of these gases affecting the users of such textiles and better still, clothing could be harmful as has been experienced with some cotton derivatives.

### 4.3 Chemical Test

Pertaining to the make-up of fibres, one of the most indispensable considerations is its implicit composites. Often, implicit molecules are not explicit and hence, cannot be observed with the naked eye unless with special apparatuses. Ultimately, the explicit and implicit determination of fibres is key ingredient in identification, construction, and maintenance. Being cellulosic, both corn husk and plantain leaf all contain the listed elements of carbon, hydrogen, and oxygen. These elements have been presented earlier in the text in the ratio –  $C_6H_{12}O_6$ . Not-with-standing the knowledge of the above chemical components, peculiar tests under cellulose test were undertaken to establish the unique identification namely: starch test, sugar test, fat stain test, and general plant stain.

#### 4.3.0 Starch Test

This test was performed to ascertain the presence of carbohydrate in the two fibres. The reagent used was iodine with which a few drops were put on the corn husk and interestingly, the portion where the solution was placed changed into dark blue, more or less indigo. The same was experienced with the plantain leaf having been subjected to similar treatment. The colour change thus is indicative enough of the presence of starch in the fibres that are believed to be rich in carbohydrate.

In their conclusion, Florian, Kronkright, and Norton, (1990), pp. 35-37, contend that having dissolved 1g potassium iodide in 100cc of water; add 1g iodine flakes. Place a drop on the material to be analysed or draw a drop through the prepared slide. Under the microscope, purple- black starch grains can be observed. A pink colour may indicate micro-organism degradation of starch.

#### 4.3.1 Sugar Test

Sugar tests like the former is a cellulose test designed to determine the presence of carbohydrate. During the investigations, Benedict's solution served as the reagent of which a few drops were added to 10ml of water and heated by placing the receptacle in a saucepan of water and heated over gas cooker. A little piece of the corn husk was dropped in the solution and not too long after heating the solvent, colour change of orange to brick red was observed. Similar application over the same conditions for the plantain leaf produced the same result.

### 4.3.2 Fat Stain Test

According to Florian, Kronkright, and Norton, (1990), mix 0.5g Sudan III or IV in 100cc of 70% alcohol (ethyl or methyl). Place a drop on the material to be analysed or draw a drop through the prepared side. Surface films of plant or animal oil, oil in plant tissue (cutin, suberin), adipose tissue, and free animal fat stain red.

### 4.3.3 General Plant Stain Test

Likewise, Florian, Kronkright, and Norton, (1990), posit that if one mixes 0.1 % safranin O in water and then places a drop on the material to be analysed or draw a drop through the prepared side. Just stand for 1 minute. Remove the excess stain by drawing water through the preparation. Wash off stain with water. Plant parts such as pollen grains, seed coats, grain glumes, woody tissue, and epidermal cells stain red.

The essences of these tests are largely a determinant in identifying the braids and establishing the extent to which the braids could be harmful or otherwise to practitioners and users of the materials. Knowledge of this is significant for forensic investigations, designing, manufacturing, showcasing, and then, care and maintenance. It equally enhances blending and doubling with other yarns for other effects especially as it stands now, the braids may not be too convenient to be worn on the human body directly for dressing. The results of the tests are indicative that both materials contain carbohydrate in significant proportions. They are also endowed with the general key elements associated with cellulosic textile materials: carbon, hydrogen, and oxygen. Collectively, these led to the conclusion that indeed the materials were vegetable textile products hence its consideration for this work. Also, artefacts of natural origin are associated with classic

appreciation and perception: likewise, this is another major reason for which the research is directed to this cause.

#### 4.4 Heat Testing

Heat could be taken for a condition where hot air is applied deliberately or accidentally. A major challenge faced by the textile materials is that, exposure to persistent heat enhances the dryness which reduces its moisture content and in the process, making it bone dry that ends up making the materials brittle. If it happens before braiding, then, the slightest twist shall just end up tearing off the materials there by impeding the evenness of the subsequent braids (yarns) to be made. Already formed braids subjected to this condition loose its compatibility and consistency and could break off and unravel when exposed to some fair amount of stress from abrasion.

The hardness and stiffness developed by the excessive dryness could promote irritating and itching sensations as well if shuffled against the skin. Intense heat from direct exposure to sunshine with little ventilation is ideal for high rate of bone dryness. Deliberate domestic and industrial heat like that from kitchen as a result of cooking could equally create similar effect like the sun with time if allowed to prevail sustainably. The drying is exacerbated when positioned in concealed area and exposed to intense heat for a long time; for instance, placing behind the rear window of a completely sealed car and exposed to high sunshine.

On the contrary, if subjected to fair amount of moisturized heat as in water vapour, both very dry plantain leaf and corn husk attain significant succulence that is ideal for twisting

and braiding. This arose because of the porousness of the molecules of the materials that make it absorbent and hence, soft, and relaxed. However, care ought to be taken to avoid sogginess, as that shall cause retting. Retting shall break apart the molecular structure of the materials causing them to disintegrate and hence, utter destruction of it.

#### 4.5 Tests for Other Essential Properties

Alongside the above treated subjects, the inquest also led to revelation of significant attributes of the corn husk and plantain leaf braids that are obvious in conventional textile features of which most have been treated already and listed below. The basis for the test of other essential properties were elasticity, extensibility, tensile strength, resilience, absorbency, dye affinity, comfortability, and reaction to dampness.

The viability of a fibre is dependent on the fact that it passes as textiles, but beyond this, the need to determine the ultimate use of the fibre is even more significant as it forms the basis of the value of the fibre. This is also the underlining factor for the essence of other essential characteristics. It revealed the extent to which the fibre is endowed with these properties to determine the adaptability and adoptability in production and regular use. Basic tests were run with apparatuses at the laboratory of the Mechanical Engineering Department of KNUST, Kumasi. The list below represents the key factors relevant to the project under study. It is worth to note the issue of disclaimer pointing out the fact that humidity, air pressure, and temperature were not factored in during the experimentation for the simple reason was that the fibres involved are already bulky, coarse, and relatively, less fine and flexible as compared to the finer ones like cotton, silk, wool, rayon, acetate, etc. For the latter, the size and weight are so minute that, 0.001g in mass or 0.001mm in length

could make a difference in its fineness and versatility that should reflect on collective fibre performance whereas with the corn husk and plantain leaf, these could be taken as infinitesimal variables. It is for this reason that those significant details were ignored. Additionally, since most of the testing were done manually and mechanically, absolute conclusions should be quite difficult to attain.

Each of the two fibres was classified into three: wet (immersed into water for five minutes; wet (immersed into water for ten minutes); and then dry. Each of these three classifications was categorized further into two where braided yarns that have not been adjoined for elongation were tested separately from the joined one to find out volatility to stress and friction. By this, twelve tests were run; six for corn husk and six for plantain leaf. During the tests, '*before and after*' measurements of the diameters and lengths were determined as well as the weight at which the fibres got broken.

#### 4.5.0 Tensile Test

This was the first test to be undertaken aiming at deducing the feasibility and/or availability of the following essential properties in the two braids that have been itemized as: elasticity, extensibility, tensile strength, resilience, absorbency, and comfortability.

For easier and expedient exercise, there was the need to have special apparatuses fixed under controlled conditions to regulate temperature, humidity, and conjecture. Since the materials involved were not as tiny as most fibres like cotton, silk, rayon, etc., the margin of relativity from atmospheric pressure could not greatly alter the concluding outcome of the inquest, hence, temperature and humidity of the laboratory were not controlled. Also,

all the apparatuses involved were neither automated nor computerized. In that the braids were and/or are already bulky, coarse, and limited to some extent in fineness and flexibility.

### ***Tools, Equipment, and Materials***

Tools engaged in testing the corn husk were veneer callipers, metal tape, pair of shears, digital camera set, bucket, pen, and sketch pad; but the equipment were tensile testing machine and broad table. The materials utilised were the corn husk braids, plantain braids, and the water at room temperature.

### ***Corn Husk***

In starting, all the fibres used for the exercise were braided following a tailored construction pattern that achieved a common diameter of 3mm and a length of 100mm. The first to be experimented was the braided corn husk that has not been adjoined (i.e. whole pieces that have not been elongated in any form) and immersed into water for five minutes. The results were that: at the weight of 1.75lbs, the fibre broke. It was deduced that, the diameter remained virtually unchanged but at the breakage point it reduced by 0.15mm. It was so, because, the momentum by which the braid broke caused that aspect of the material to unravel and became dishevelled. This phenomenon was experienced throughout the rest of the tests. This accounts for the reason why the diameter of 'after' was kept at 3mm through the experiments for tensile strength. The initial length of 100mm extended to 121mm at point of break. The second test was run on another corn husk that has been adjoined (series of fibres were braided in succession for elongation: sort of

polymerization) and wetted for ten minutes but had the same dimensions as the former. The braided material got broken under weight of 2.5lbs and increased in length marginally to 122mm. Beyond, corn husk of similar structure and dimension of before was immersed in water for ten minutes and rather, major differences were observed. Firstly, the non-adjointed one broke at the weight of 4.25lbs and extended in length to 131.5mm. Its adjointed counterpart also broke at 4.25lbs but with varying length of 133mm. Finally, on this session, the dry ones came into the fore where the non-adjointed corn husk was the first to be tested which produced rather quite a pattern where it broke at the weight of 10lbs from 0lb and then stretched from 100mm to 120mm. The non-adjointed one on the other hand, broke at 13lbs from 0lb having been stretched from 100mm to 120mm.

By inference, it could be seen that dried corn husk and plantain leaf are quite closely matched in strength; however, the corn husk becomes weak and volatile when moisturized. The corn husk further regains marginal strength following prolonged stay in water. However, moisture generally disorganises the compatibility of the corn husk as it leads the braids to become dishevelled. Also, if the joining during braiding is not properly secured, the extensibility of the braid is elongated as the observed revelations from the chart stipulate. Revelation from the test indicates further that the corn husk braid has tremendous tensile strength and it is very resilient when dried. It is marginally extensible and elastic there by making it less flexible and ultimately, less comfortable effect on the skin as its drapery effect is limited.

The data collated from the tests that were run have been organised in Table 5:

Table 5 – Data Chart for Tensile Test of Corn Husk

Data Chart for Tensile Test							
ITEMS		DI AMETERS		LENGTHS		BREAKAGE WEIGHTS	
		Before	After	Before	After	Before	After
Wet 5min in Water at Room Temperature	Non-Adjoined	3mm	3mm	100mm	121mm	0lb	1.75lbs
	Adjoined	3mm	3mm	100mm	122mm	0lb	2.5lbs
Wet 10min in Water at Room Temperature	Non-Adjoined	3mm	3mm	100mm	131.5mm	0lb	4.25lbs
	Adjoined	3mm	3mm	100mm	133mm	0lb	4.25lbs
Dry	Non-Adjoined	3mm	3mm	100mm	120mm	0lb	8lbs
	Adjoined	3mm	3mm	100mm	120mm	0lb	13lbs

**NB:** The 3mm length of the *after* diameter is approximated as infinitesimal figure differences between 0.015 and 0.035 from the *before* were recorded.

Source: Field Data (2010)

### ***Tools, Equipment, and Materials***

Like the corn husk, tools, equipment, and materials adopted were veneer callipers, metal tape, a pair of shears, digital camera set, bucket, pen, sketch pad, tensile testing machine,

and broad table. The materials were corn husk braids, plantain leaf braids, and water at room temperature.

Tests for the plantain leaf almost immediately followed that of the corn husk and the first was the test for braid (non-adjointed) immersed in water for five minutes. With the same conditions of the former pertaining, the observations made were – the material stretched from 100mm to 123mm where it also broke under the weight of 12lbs. Next is the adjointed, which revealed a stretch of 120mm from 100mm that broke under the weight pressure of 9lbs. Subsequently, the non-adjointed that had been immersed in water for ten minutes now became the focus and after the conduction of the test, the interesting disclosure found were it stretched to 135.5mm from 100mm and broke at 13lbs from 0lb. Similarly, the adjointed stretched from 100mm to 134mm and then broke at 9lbs upon stretching from 0lb. The last test in this section involved dried braids of both non-adjointed and adjointed plantain leaf. Upon subjection to pressure, the non-adjointed showed a tolerant stretch from 100mm to 120mm where it broke at 11lbs. The adjointed stretched to 118mm from 100mm and then broke at 12lbs from 0lb.

The data collated from the tests that were run have been organised and provided in Table 8. To a large extent, the plantain leaf has better resilience and stability in and out of water than the corn husk. It is equally extensible and elastic unlike the corn husk as moisture virtually has no impact on it. Even stretch and breakage points differed slightly, in contrast with the corn husk; the differences showed that the differential margins of the corn husk were high when dry and low when wet. On the contrary, regardless of the state (dry or wet), the plantain leaf remained strong and stable indicating virtual maintenance of form. As noted earlier, findings from the test indicated further that the plantain leaf braid has

greater tensile strength than the corn husk and it is equally resilient when dried. It is marginally extensible and elastic thereby making it less flexible and ultimately, less comfortable effect on the skin as its drapery effect is limited just like the corn husk.

Table 6 – Data Chart for Tensile Test of Plantain Leaf

Data Chart for Tensile Test							
ITEMS		DIAMETERS		LENGTHS		BREAKAGE WEIGHTS	
		Before	After	Before	After	Before	After
Wet 5min in Water at Room Temperature	Non-Adjoined	3mm	3mm	100mm	123mm	0lb	12lbs
	Adjoined	3mm	3mm	100mm	122mm	0lb	9lbs
Wet 10min in Water at Room Temperature	Non-Adjoined	3mm	3mm	100mm	123mm	0lb	12lbs
	Adjoined	3mm	3mm	100mm	122mm	0lb	9lbs
Dry	Non-Adjoined	3mm	3mm	100mm	120mm	0lb	11lbs
	Adjoined						
	Adjoined	3mm	3mm	100mm	118mm	0lb	12lbs

NB: The 3mm length of the *after* diameter is approximated as infinitesimal figure differences between

0.015 and 0.035 from the *before* were recorded.

Source: Field Data (2010)

#### **4.5.1 Absorption Test**

Following the tensile test, the absorption test followed. Together with the tensile test, these two broad experiments revealed vital properties relating to the other essential properties and care and maintenance. The absorption test was vital in that it was to find out the capabilities of the braids regarding the absorption or repellent of water (fluids) and dye affinity.

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#### **Tools, Equipment, and Materials**

With the conditions of the tensile test pertaining as well, the absorption test however, utilized the following: water receptacle, veneer callipers, tape measure, a pair of scissors, gas cooker, saucepan, and cup. The materials involved were braided corn husk, braided plantain leaf, and water.

It should be re-iterated through the disclaimer that the conditions that abounded for the previous tests applied here likewise that the laboratory temperature and humidity were not controlled and also, sensitivity of the equipment and applications were not automated and/or computerized because of the nature of the materials under review.

#### **Corn Husk**

The first exercise performed was the construction of braids each of which had a dimension of 3mm at the diameter and a length of 45mm and placed in containers. The containers were separated; one represented room temperature and the other represented boiling point.

To start, 5ml of ordinary water under room temperature was put into the first container and the corn husk braid (45mm in length) was immersed in it. No sooner than that, the corn husk began to unravel. By the tenth minute when the experiment ended, the corn husk had almost become completely dishevelled. The water level of the corn husk dropped from 0.5ml to 4.95ml.

Following this, the second test was forwarded where water of 5ml boiling point was poured into the receptacle. The amazing experience was the moment the yarn was put in the hot water; the corn husk got completely dishevelled. The corn husk maintained its length but the water level dropped to 3.80ml from 5ml. The experiment has been represented in Table 7 shown below.

Table 7 – Data Chart for Absorption Test for Corn Husk

Data Chart for Absorption Test							
	DIAMETERS		LENGTHS		TIME DURATIONS	WATER LEVELS	
	BEFORE	AFTER	BEFORE	AFTER		BEFORE	AFTER
TEMP- ERATURES							
ROOM TEMP- ERATURE	3mm	Unravelled	45mm	45mm	10min	5ml	4.95ml
100°C	3mm	Unravelled	45mm	45mm	10min	5ml	3.80ml

Source: Field Data (2010)

### *Plantain Leaf*

Actually, the tests were carried out concurrently for relative observation and analyses. Like the corn husk, plantain braid of the dimension  $3\text{mm} \times 45\text{mm}$  was immersed into water of room temperature for 10min. After exhaustion of the 10min, the plantain leaf virtually maintained its form and shape through the period under review and after. Additionally, it (braid) increased in diameter to 3.3mm. It maintained the length but the water level dropped to 4.95ml. After 15min, the plantain leaf remained as it was but the corn husk totally got dismantled immaculately. Throughout all these period, the plantain remained unchanged as well as the lengths of both yarns; however, the water levels showed some interesting changes. After 15min, the plantain leaf receptacle reduced by 0.10ml to 4.90ml signifying the extent of relative absorption of the plantain leaf over the corn husk regarding immersion in water under room temperature. However, in hot water, the plantain leaf absorbed more water as was with the corn husk for the 3.80ml drop attested to that.

By this, it could be concluded that, warm water gets absorbed better by both braids although the corn husk is disadvantaged as the water gets it destabilized through excessive absorption which reduces the ability of the twisted strips to obtain firmer grips during braid formation. This accounted for the reason why water levels in the corn husk receptacles dropped significantly lower than those of the plantain leaf. Additionally, the texture of the corn husk also reduces the ability of the material (twisted corn husk strips) to achieve firmer grips during braiding. Another major deduction from the experiments is that both braids have the capacity to absorb colorants as in dyes, printing pastes, and paints. Printing pastes and paints should be ideal for corn husk as dyeing processes on the other hand may end up destroying the whole art piece. Plantain leaf should not have any major problem

with any of the available media but a blend with corn husk shall make the ultimate artefact vulnerable to the weakness of the corn husk. However, concentrated erratic solvents like caustic soda can rot both braids, especially the plantain leaf if not well controlled. For the corn husk, its fragility is exacerbated if contact is made with any powerful solvent. Hence, printing and/or painting should be ideal as colorant for the artefact as sogginess is virtually reduced under such circumstances (printing/or painting). The above is illustrated by the provisions in Table 8 and Plates 4.5(a) and 4.5(b):



Plate 4.5(a): Braided Corn husk and Plantain leaf in water at 100°C Temperature

Source: Field Data, (2010)



Plate 4.5(b): Braided Corn husk and Plantain leaf in water at Room Temperature

Source: Field Data, (2010)

**Table 8 – Data Chart for Absorption Test for Plantain Leaf**

Data Chart for Absorption Test							
	DIAMETERS		LENGTHS		TIME DURATIONS	WATER LEVELS	
	BEFORE	AFTER	BEFORE	AFTER		BEFORE	AFTER
TEMP-ERATURES							
ROOM TEMP-ERATURE	3mm	3.1mm	45mm	45mm	10min	5ml	4.90ml
100°C	3mm	3.3mm	45mm	45mm	10min	5ml	3.80ml

Source: Field Data, (2010)

#### 4.6 Care and Maintenance

Processing of textiles and use of textile products always expose them (textiles/apparel) to filth and damage. On the contrary, some textiles may possess some elements that could react with detergents like bleaching agents that could harm practitioners and users of such materials. These assertions bring in the question of health and safety that underlines the essence of this sub-topic which is based literally on the findings of the experiments conducted. Titles to be treated are: washability (hand & machine), bleaching, dry cleaning, pressing, drying, and damage repair.—

#### 4.6.0 Bleaching

Bleaching is a noun from the word bleach that has been defined by the Word Web Encyclopaedia, (2008), as: remove colour from, e. g. "the sun bleached the red shirt"; make whiter or lighter, e. g. "bleach the laundry". The fact is that, there are some types of dirt, especially wax-based types that are difficult to cleanse. Often, powerful elements from chlorine or sodium pyrophosphate are used as bleaching agent in cleansing, but for this textile material, bleaching could easily deteriorate it and so it is not advisable to apply such elements for its (textiles) treatment. The Figure 3 represents the international unit indicating that, the textiles should not be bleached (McGuire, 1978).

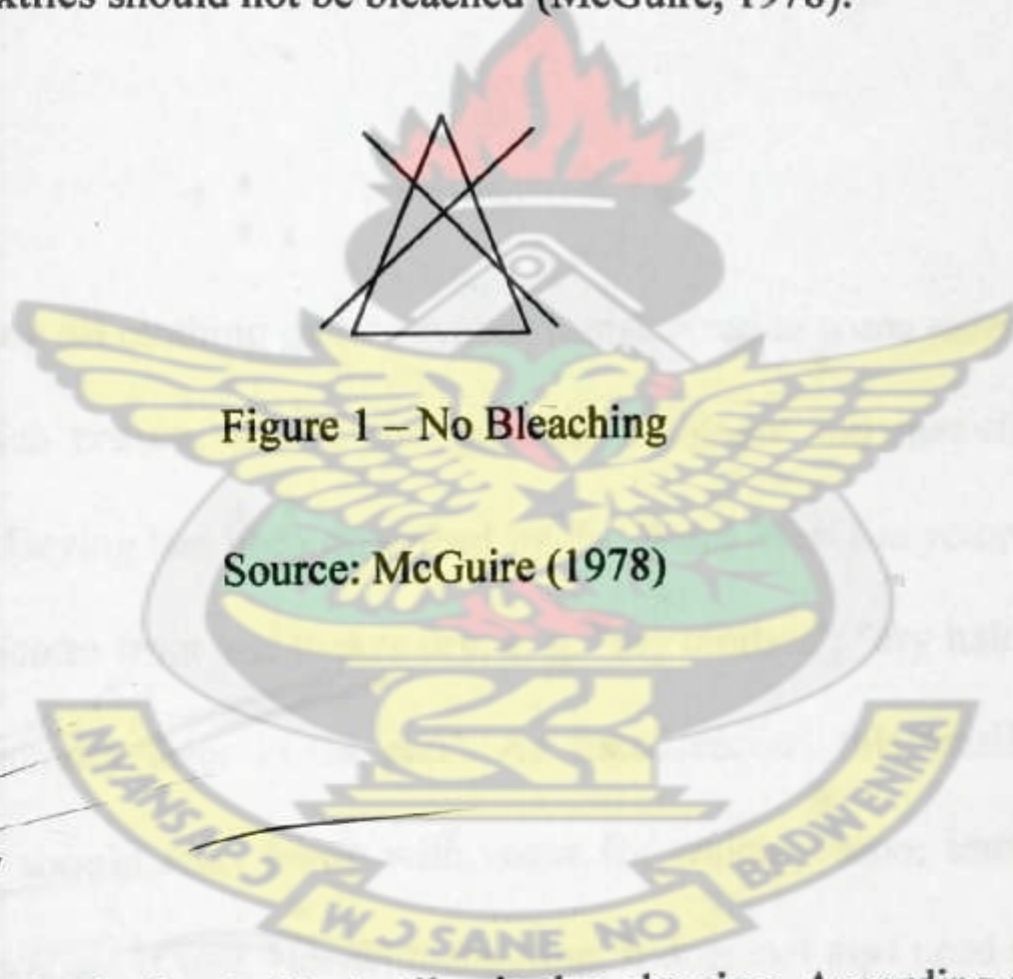


Figure 1 – No Bleaching

Source: McGuire (1978)

#### 4.6.1 Dry Cleaning

Alternative cleansing for hydrophobic textiles is dry cleaning. According to Word Web Encyclopaedia, (2008), dry cleaning is that type of treatment for clothing and textiles where solvent other than water is applied. Dry cleaning should reduce strain and stress associated with washing that has the tendency of deteriorating the over-all attire. However, dry cleaning is also known for adopting some powerful solvents for fabric treatment that could exhume poisonous gases and are capable of hurting not only the launderers but,

people leaving quite close to radius where the solvent is applied and the users of the apparel. Figure 4 below is the international unit for dry cleaning (McGuire, 1978).

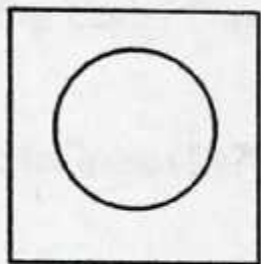


Figure 2 – Dry Cleaning

Source: McGuire (1978)

#### 4.6.2 Drying

The tendency of having all clothing getting wet or moisturized to some extent when in use is very high for which reason, textile and garment designers and manufacturers make provision for drying. Drying has been described by the Word Web Encyclopaedia, (2008), as the removal of moisture from and makes dry, e. g. "dry clothes"; "dry hair"; become dry or drier, e. g. "the laundry dries in the sun". As stated earlier, this textile/apparel is a novelty that for now should react badly with water for which reason, immediate drying should not be compromised if wet. Not-with-standing, it does not also need excessive heat especially from the sunshine to dry hence, the symbol below showing that it should not be exposed to direct sunshine but shaded area for drying. Otherwise, the apparel shall become bone and lose its succulence and become brittle, then, fritter off. The International System Unit for indicating not to be dried under direct sunshine is illustrated Figure 6 below, McGuire, (1978):

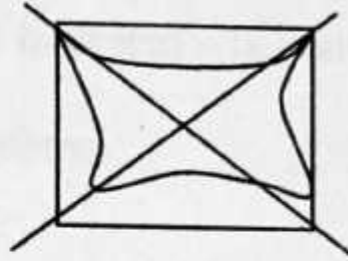


Figure 3 – No Drying Under Direct Sunshine

Source: McGuire (1978)

#### 4.6.3 *Damage Repair*

Damage has been described by the MS Encarta Dictionary, (2009), as the physical injury that makes something less useful, less valuable, or unable to function. Also, the Britannica Encyclopaedia, (2010), puts it as loss or harm resulting from injury to person, property, or reputation. Repair however, has been defined by the Britannica as: to restore by replacing a part or putting together what is torn or broken; to restore to a sound or healthy state. The World Web Encyclopaedia, (2008), presents it as: Restore by replacing a part or putting together what is torn or broken.

Being a material for display at public places makes the project artefact susceptible to incidents that have the potential of changing status of the item. Should the worst happen either of two possibilities is likely to occur: repairable damage and irreparable damage. Obviously irreparable damage should also connote that the artefact must have been spoilt completely indicative of the fact that the likely damage should have been very severe and intense. On the contrary, repairable damage is a reflection that whatever the situation, there is a chance for restoration. Possible damages that have the propensity for restoration have

been organised according to factors indicated – laceration, fluid spillage, gathering of dust, discolouration, over-dryness, and inferno.

### **Laceration**

The Britannica Encyclopaedia, (2010), defines laceration as having the edges deeply and irregularly cut. The World Web Encyclopaedia, (2008), states it as; cut or tear irregularly. Contextually, laceration is being used to mean regular and irregular cuts. Occurrence of laceration could be attributed to unravelling of stitches or cutting the stitches or the braided materials. In all of these, slip hemming could be used to repair upon removing the garment from the statue momentarily.

### **Fluid Spillage**

Fluid is a continuous amorphous matter that tends to flow and to conform to the outline of its container is a liquid or a gas, World Web Encyclopaedia, (2008). The Britannica Encyclopaedia, (2010), makes fluid as having particles that easily move and change their relative position without a separation of the mass and that easily yield to pressure: capable of flowing. Spillage is described by World Web Encyclopaedia, (2008), as the act of allowing a fluid to escape. The Britannica Encyclopaedia, (2010), further declares it to be material lost or scattered by especially accidentally or unintentionally falling, flowing, or running out so as to be lost or wasted. To forestall unpleasant experiences as depicted like the above, place the artefact in an airy area or use the hand drier to sip spilt fluids. If the fluid has significant thickness, it may have to be scooped and cleaned before drying. If the

artefact gets wetted, truncate the source of the fluid. Immediately mop up the excess water afterwards and dry with drying apparatuses like the hand drier. If such drying apparatuses are unavailable, place the art piece in clean, dry, and airy environment.

### ***Gathering of Dust***

Assembling or getting together is the World Web Encyclopaedia, (2008), definition for gathering. It is further defined by MS Encarta Dictionary, (2009), as the collection of objects. It equally presents dust as very small dry particles of a substance such as sand or coal, either in the form of a deposit or a cloud. Adding to it, the World Web Encyclopaedia, (2008), explains dust as fine powdery material such as dry earth or pollen that can be blown about in the air. The possibility of the artefact gathering dust is fairly high especially if the artefact should be showcased in environments that are inclined to dust attraction. Should this happen, a brush with fairly soft bristles could be used to wipe it off or blow it away with hoover machine.

### ***Discolouration***

The World Web Encyclopaedia, (2008), considers discolouration as act of changing the natural colour of something by making it duller, dingier, unnatural, or faded. The Britannica Encyclopaedia, (2010), sees it as the alteration or changing of hue or colour. Varnishing, painting, dyeing, and/or printing are options that could prevent discolouration. Non-the-less, if discoloured, all the media stated could still be applied to cover the damage with exception of varnish.

### ***Over-dryness***

From the World Web Encyclopaedia, (2008), dryness is the condition of not containing or being covered by a liquid. The Britannica Encyclopaedia, (2010), supports it as free or relatively free from a liquid and especially water; lacking precipitation or humidity. Over is an adverb signifying the excessiveness of dryness to be endured. Over-dryness should make the apparel so dry that it shall become prone to frittering off under little mechanical pressure. To avoid this, varnish and painting with enamel paint can be used for prevention. However, components of the elements of the varnish and the enamel paint should make it dangerous for humans to use the attire directly as some of the chemical components of the paint can be reactive to the skin and pose tragic health conditions. To forestall this, prevention should be the key word.

### ***Inferno***

Inferno has been defined by the World Web Encyclopaedia, (2008), as a very intense and uncontrolled fire. The Britannica Encyclopaedia, (2010), also claims inferno to mean an intense fire. For this presentation however, inferno has been adopted as a terminology indicating burning or fire consumption mildly or severely. Actually, both corn husk and plantain leaf are combustible but the latter is more volatile. However, the tightness of the spins in the braids hinders free flowing combustion thereby reducing the tendency of burn unless the sparkle is intense and sustained. If finished with varnish or enamel paint, then, obviously the instability and susceptibility to flame should be enhanced. To avoid damage by fire, the artefact should not be located near volatile substances or naked fire as scorching and fire shall cause irreparable damage.

#### 4.7 Finishing

In reference to the Britannica Dictionary, (2010), finishing is a noun from finish that signifies the quality or state of being perfected. Enhanced definition by the Britannica Encyclopaedia, (2010), rather describes the term finishing to include all the mechanical and chemical processes employed commercially to improve the acceptability of product, except those procedures directly concerned with colouring. The objective of the various finishing processes is to make fabric from the loom or knitting frame more acceptable to the consumer. The World Web Encyclopaedia, (2008), simplifies it as a decorative texture or appearance of a surface (or the substance that gives it that appearance).

According to the Britannica Encyclopaedia, (2010), it is frequently necessary to carry out some preparatory treatment before the application of other finishing processes to the newly constructed fabric. Based on that, the braids and constructed costume was subjected to stress to observe effects and flaws and the possible impact on the dress. From the inquests, it was deduced that colour adoption was plausible as the corn husk and the plantain leaf were fairly absorbent. Printing therefore could be adopted conveniently as separate medium or joint media to add beauty and lustre likewise painting and spraying. Also, decorative stitches could be applied through varying colours for other exciting effects. Coupled with the above, trimmings and notions could be used for additional embellishment. Where necessary, varnishing becomes the last finishing medium before packaging and presentation. Varnishing in particular enhances the sheen from the various media. In the process, it increases the thickness of the braids and the stitches thereby raising the strength and quality of the corn husk and plantain leaf. On the contrary, varnishing should make the apparel more bulky and less porous. Chemical contents and

possible health implications make it undesirable for humans to adopt the varnished costume for dressing.

It could therefore be concluded that, fibre structure analysis being the first of the sub-chapters was a key element for the determination of how far the materials could be considered as textile fibres; better still yarns or braids. From this, it was possible to determine resilience and drapery effects of the materials. The usefulness of the conclusion shall be in the design and construction of the artefact in addition to care and maintenance upon use. The sub-topic considered four main ingredients that had been well treated. Another useful factor for controlling, maintaining, and managing the materials and possible subsequent use was the biological test. By design, this test was fashioned to establish likely impact of living organisms especially man and domestic animals, and how to control where adverse findings existed. Being cellulosic, the likelihood impact from fungi and bacteria under damp conditions is a possibility and hence, the focus of the experiment. This information should be useful in preserving and prolonging the lifespan of the materials during manufacturing and use. The relevance of each of the tests listed above cannot be underestimated but, surely, the physical test stood so significant. It was very essential as in textiles; it determines and guides the identity and use of fibrous materials. Other questions regarding elasticity, absorbency, comfort, tenacity, resilience, and drapery effect had their source from here. The benefits were obvious as it reflected in the complexity of eventual fabric and apparel to be designed. Complementing the design, it also assisted in the determination of care and maintenance of the eventual artefact.

Explicit information of textiles were so useful but still inadequate as the implicit information were equally indispensable. If chemical test was not considered, a major

damage could be done to the corn husk and plantain leaf likewise other textile materials used alongside with them likewise users of the braids. Knowledge of the chemical components and the determination of neutralizing mechanisms underlined this test. To have the eventual artefact being used by man in both private and public places well preserved, thermal test became useful in determining the feasibility of the textile fibres. This test was to certify to what extent the corn husk and plantain leaf were flammable. It also established the effects of bone dryness on use and control. From the study, it was discovered that very dry atmosphere may not be convenient for maximum performance. Also, corn husk and plantain leaf were relatively volatile and could readily burn with just a spark. However, the compatibility of the braids greatly reduced the amount of volatility unless there was sustained spark for some time. All the tests suggested so far were complementary to each other.

Actually, by the findings of tests for other essential properties, more informed opinions on comprehensive yarn features and performances were treated in guiding its application for other uses. Its significance literally laid in the end use of the materials: manufacturing and finishing. By this, it was easier to consider the factors for determining care and maintenance. Afterwards, care and maintenance was deliberated to reveal strategies for preventing possible accident and damage. Complementing this was damage repair, which was actually about fixing problems of damage that could arise from accidents and wear and tear to prolong the lifespan of the textile material as well as the eventual artefact to be made. It established the measures to be taken for preservation through collective interpretations and deductions of the findings of all the experiments. Finishing then ended the chapter showing the mechanisms by which additional effects for better performance

and look could be employed. The aim is for the enhancement of looks for presentation and display.

# KNUST



## CHAPTER FIVE

### ARTEFACT PRODUCTION

#### 5.0 Customer Profile

The client is the most important factor to consider when designing. Client in this context also stands as the customer who has been described by Bell and Ternus, (2003), p. 25 and MS Encarta Dictionary, (2009), to be an individual or an institution that purchases commodities. The essence of the customer's action through purchasing is to consume – that is literally to use the product or service. For optimal effects, the commodity should be endowed with tailored features that reflect the status, temperament, corporate identity, occupation, orientation, among others of the client. Though obvious similarities exist between individual and institutional clienteles, there abides distinctive differences as well. Since this study is largely geared towards institutional customer, surely, that is where the emphasis shall be through the customer profile. In this, the various identifying peculiarities of the target customers and prospective customers of La Palm as well as vision, mission statement, and brand (essentially, totality of the institutional personality) shall be organised in explanatory description such that at a glance, informed understanding could be made of the sense of purpose of the organization. Based on the provided information on the “*Customer Profile*”, tailored design will be made to satisfy exact needs as in silhouette, pose, colour, passion, grace, emphasis, gaze, impact, appreciation, beauty, message, and price. According to Priscilla Ayun of Human Resources Department and Tawiah Gyamfi, Ag. Maintenance Manager – La Palm Beach Resort, the following listed factors are the essential ingredients that distinguishes them (La Palm Beach Resort) from the rest in 2009.

**Mission Statement:** “To be quality driven and efficient hotel, attracting guests and providing them with excellent service through empowered staff and ensuring above average returns to our shareholders”.

**Vision:** “Our vision reflects the vision of Golden Beach Hotels Ghana Ltd. i. e. to be internationally recognized as the leading Ghanaian Quality Hospitality Group”.

**Nature:** A pleasure hotel that is ideal for holidaying and to some extent, executive functions

**Passion:** A pleasure hotel that is reasonably romantic but not salacious.

**Milieu:** Soothing ambience.

**Strategic Advantage:** Chalets, green lawn, sea, wide space, antiquity, and native traditions as in indigenous sculpture, paintings, architecture, and labelling blending with contemporary exhibits and decor.

Additionally, Priscilla Ayun, provided core values crafted out of the above listed principles to aid in determining a comprehensive customer profile. The core values were improved guest satisfaction, improved employee satisfaction, improved employee retention, and improved meeting satisfaction. Others were improved food quality at F & B outlets and creative banquets and food preservation, reduced incidents/severity of losses, involved employee in planning of work, improved labour productivity, and enlarged REvPar.

Reference to the questions from the interviews that drew out the responses from which the corporate identity and customer profile were fashioned are attached to the appendix (refer to the APP – 3 for sample).

## 5.1 Idea Development Processes

The idea development boards are basically made of four boards that constitute sources from which the ultimate design was extracted. In the past, pictures from photographs, catalogues, magazines, and the like were organised on boards to complete the idea development. This time, 'layers' and 'multi-channel' under 'Adobe Photoshop' were used to extract the information from Wikipedia, (2009) and EHow, (2009), and then adjusted to form the boards. These boards were the – mood board, motif board, trend board, and sample board.

### 5.1.0 Mood Board



Figure 4 – Mood Board

Source: Wikipedia (2009) and Field Data (2009)

A mood board is also known as the theme board. It is a board that contains graphical information about a concept under a theme. Ideally, the concept and the theme relates to the design or the collection for which the mood board is made. Information put on the board comprises pictures that interpret or explain the basis underlining the design. For this exercise, information on the mood board was designed to portray the corporate philosophy and orientation of La Palm in relation to the solution of the problems and objectives of this entire exercise. Regarding this, *Splendid Coral* was chosen as the title for the mood board and on the board were array of colourful local and exotic marine life as seen in the illustration: Figure 7.

### 5.1.1 Motif Board

Closely related to the Mood Board is the motif board which was a board that contained ideas that came in the form of patterns and bore innovative inspirations. All the patterns of the motif board had their sources from the mood board. Having been lifted, some of the selected patterns were applied in verbatim, but most were manipulated further to derive more interesting patterns that were original for the design. Among the patterns extracted were colours, lines, shapes, silhouettes, and texture. The usefulness of the motif board was relevant as it served as a bank for innovative ideas and then, authenticated the design by ensuring originality and ingenuity on the part of the designer. Regarding the motifs for this work, *Layers* under Adobe Photoshop was used to prune and manipulate the patterns into desired effects as seen in Figure 8.

## MOTIF BOARD



Figure 5 – Motif Board

Source: Wikipedia (2009) and Field Data (2009)

### 5.1.2 Trend Board

This is yet another board which cannot be left side stepped in fashion design. Since fashion is always connected with wears of vogue pertaining over some period(s), it is prudent for the astute designer to have clearer understanding and view of the future mode so as to avoid deviation from the obvious. The Trend Board thus directed the designer to conform to monumental costumes of the calibre that was innovative, creative, unique, attractive, romantic, graceful, beautiful, and modern. The silhouette of the model and the pose likewise the costume design reflected the trends as observed from Figure 9.

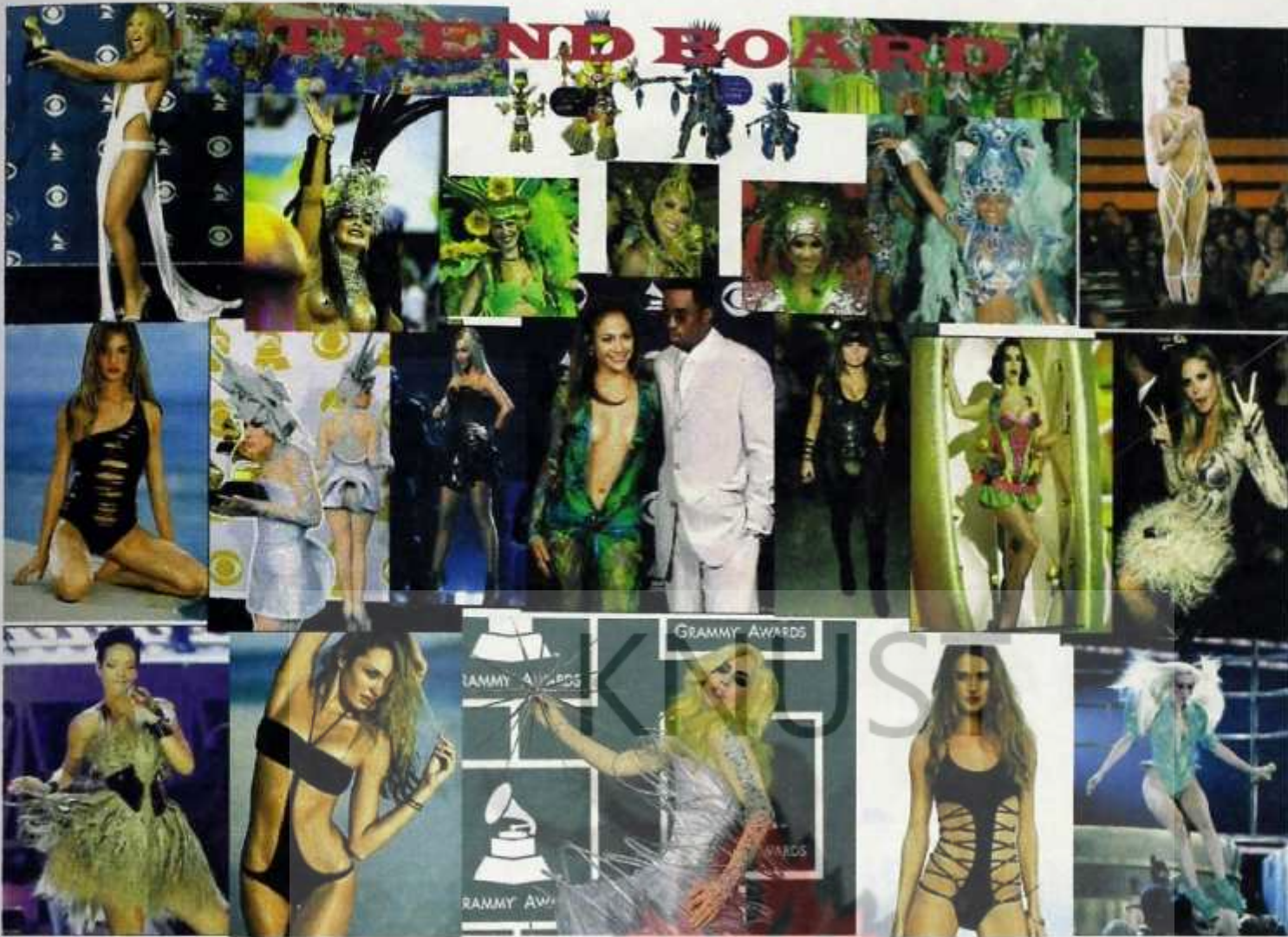


Figure 6 – Trend Board

Source: <http://rover.eHow.com/rover/1> (2009) and Field Data (2009)

### 5.1.3 Fabric/Sample Board

Operated like the Motif Board, the Fabric/Story Board also had the same basic information extracted from the mood board. It differed from the motif board in the sense that possible styling from fabrics, trimmings, and notions were fixed on this board based on the ideas from the motifs. This went on to serve as the source from which creative patterns drawn from the motifs. This went on to serve as the source from which creative patterns drawn from the motif board were organised into style samples through the manipulation of the fabrics, trimmings, and notions. On the fabric/story board, the style samples were organised in a form to enhance the entire design formation and finishing as illustrated in

Figure 10:

## FABRIC BOARD



Figure 7 – Fabric/Sample Board

Source: Wikipedia (2009) and Field Data (2009)

### 5.2 Designing

Designing was series of graphical and instructional inscriptions of the design crafted from the idea development. The designing processes gave picturesque presentation of the costume and the model leading to the manufacture according to the predetermined patterns to avert deviation and mistakes. The uniqueness of this process is the combination of three major art disciplines – textiles, sculpture, and fashion. The listed factors below were considered:

### 5.2.0 Design

Conceived in the mind; inventing and creating costumes out of the initial conception for dressing is termed design. Design composition involved making a graphical plan of fashion systematically to fit pre-defined standards. Fashion design thus could be described as the portrayal of contemporary trends in dressing to reflect a given trend for a targeted client(s). For decisive and creative driven design, eleven style samples were fashioned based on the fact that innovation and creativity was expanded to cover a broader horizon. Most of the styles evolved out of curious sketches as the attempts were made for unique artistic statement. These styles underwent refinement zeroing in on one that stood out as the final design.

Firstly, based on the institutional personality that the La Palm (being the trade name of La Beach Resort) radiated from the hindsight, the costume was fashioned to look romantic and quite erotic but not obscene and offensive. As it were, regardless of the fact that the hotel was the pleasure type, it also focused on decency and formality as in some cases, it performed executive functions like a typical executive hotel. With the above information, the earliest style sketched: Figure 8 (KBB 1) showed just that.

However, it did not appear to be of much excitement leading to crafting of KBB 2 (Figure 9). KBB 2 which was also found to be not too romantic and hence, merged with the former to generate KBB 3 (Figure 10). Even though KBB 3 looked quite appealing, it was still considered inadequate, hence the innovation into KBB 4 (Figure 11) which appeared to reveal more of the silhouette to spice up the passion and grace of the entire artefact. Still, it was short of the best leading to KBB 5 (Figure 12) and KBB 6 (Figure 13). KBB 5 and

KBB 6 were quite interesting but subjecting it to critique showed that its aesthetic qualities and appreciation were not much enhanced.



Figure 8 – KBB 1, Figure 9 – KBB 2, and Figure 10 – KBB 3 respectively

Source: Field Data (2009)

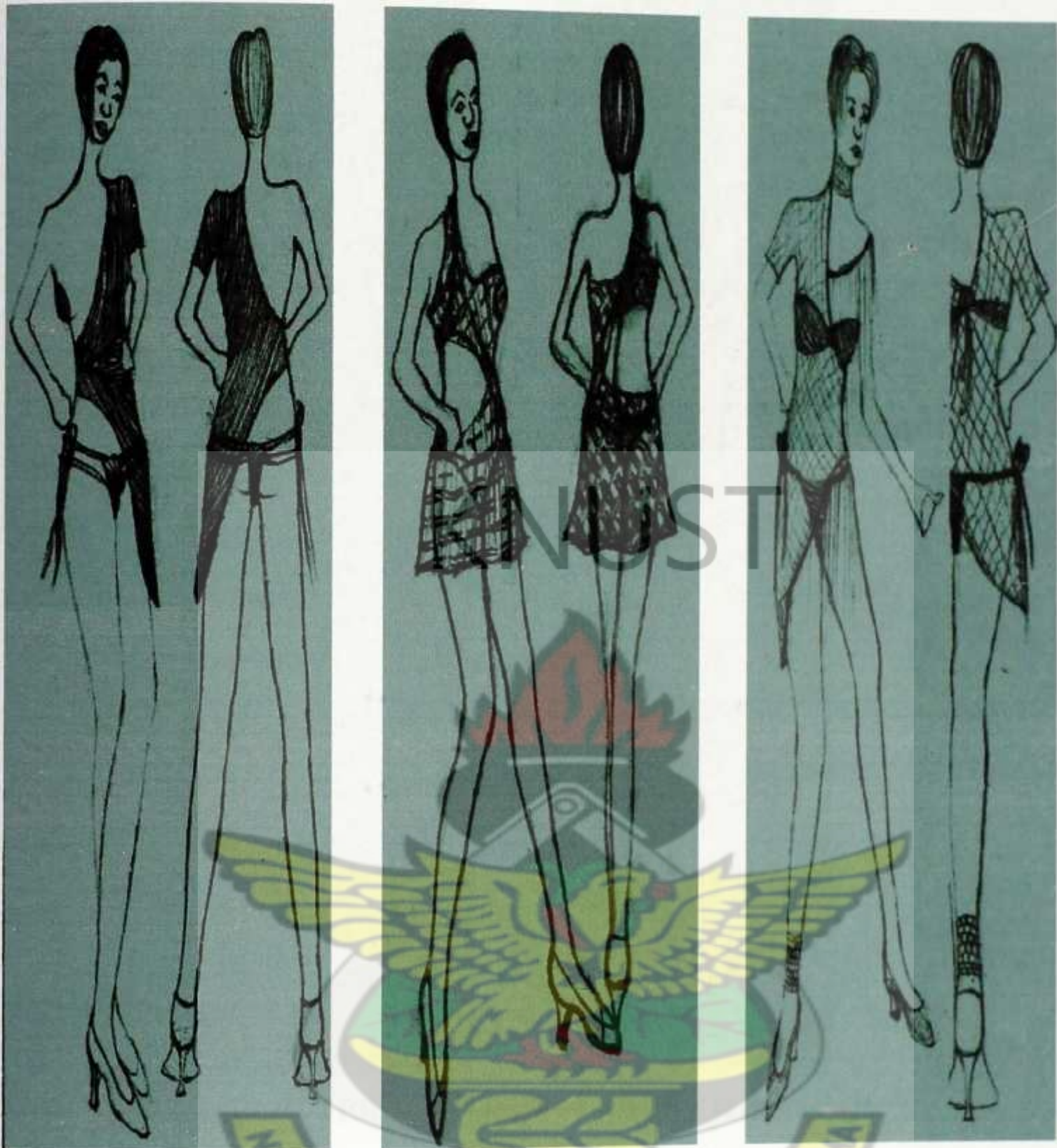


Figure 11 – KBB 4, Figure 12 – KBB 5, and Figure 13 – KBB 6 respectively

Source: Field Data (2009)



Figure 14 – KBB 7 and Figure 15 – KBB 8 respectively

Source: Field Data (2009)

Based on the limitations of the effects of KBB 4, KBB 5, and KBB 6, KBB 8 and KBB 9 were formed. They were intended to make the costume more romantic, beautiful, and attractive. By design, it was also to make fitting and removal convenient. Nevertheless, KBB 7 (Figure 14) and KBB 8 (Figure 15) were seen to be too erotic for comfort and so KBB 9 (Figure 16) was developed to reduce the explicit exposure causing the lewdness.

The result led to KBB 10 (Figure 17) which concealed the silhouette fairly but was not appreciated as appealing and exciting. However, elements from KBB 7, KBB 8, KBB 9, and KBB 10 were incorporated into a basic unit as KBB 11 (Figure 18).

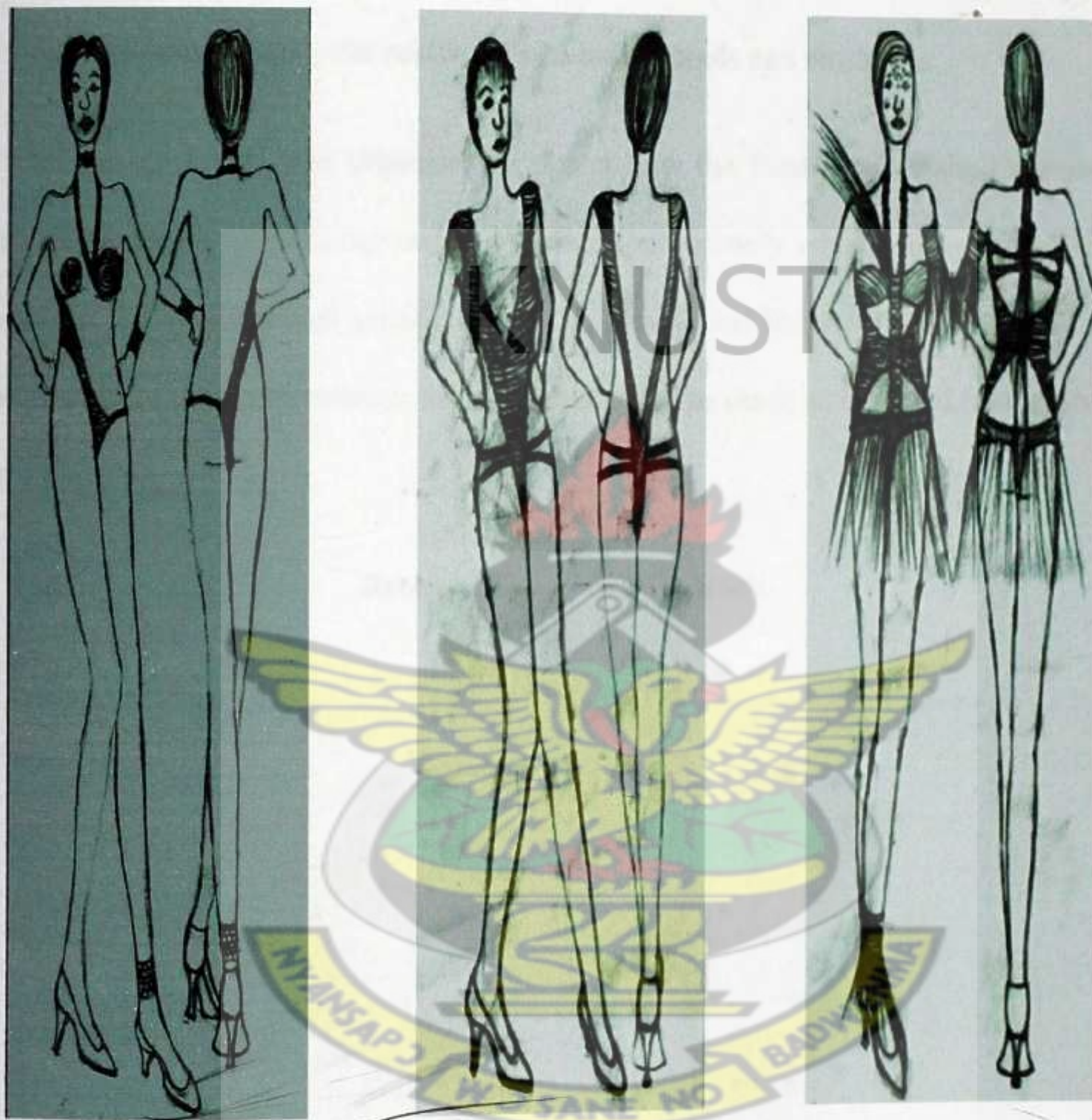


Figure 16 – KBB 9, Figure 17 – KBB 10, and Figure 18 – KBB 11 respectively

Source: Field Data (2009)

The design was created to reflect the silhouette of the posed monument to be cast much as it reflected the corporate principles and core values of La Palm. The same principles

considered for the attire were also applied for the choice of the silhouette of the monument. Those principles were the institutional personality of La Palm: occasion, function, cost and price, as well as the conventional ones like unity, balance, rhythm, contrast, emphasis, proportion, harmony, mystery, and impact. By the above, the organisational principles and core values as determined were packaged into artistic tools and structures.

The final design board was organised to depict how the final artefact shall appear. The perceived monument was composed to resonate appropriately with design of the dress and accessories. To make a real artistic sense, the image was shown front and back so that better perception and appreciation of the design could be made as depicted by the provided illustration – Figure 19.

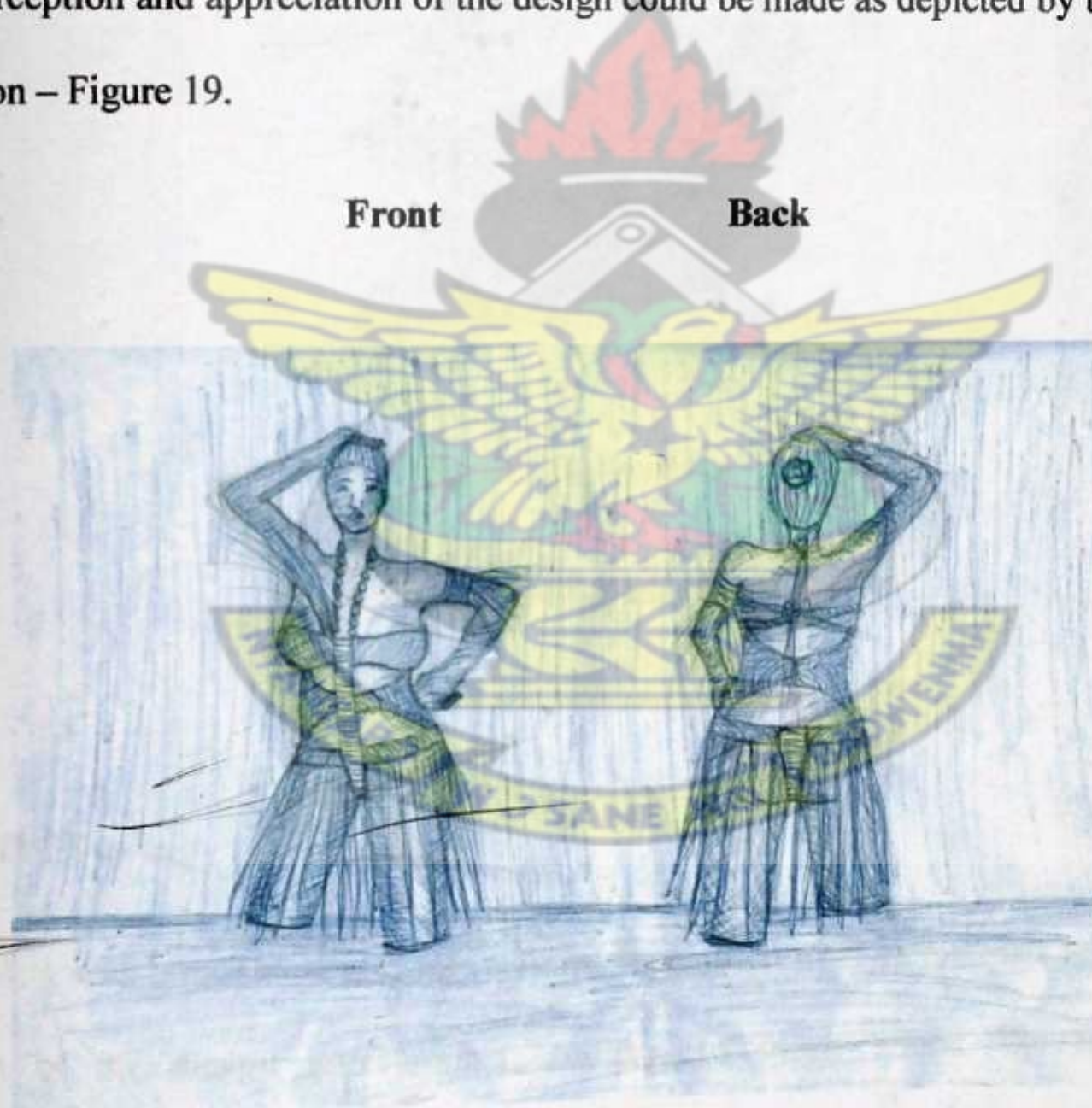
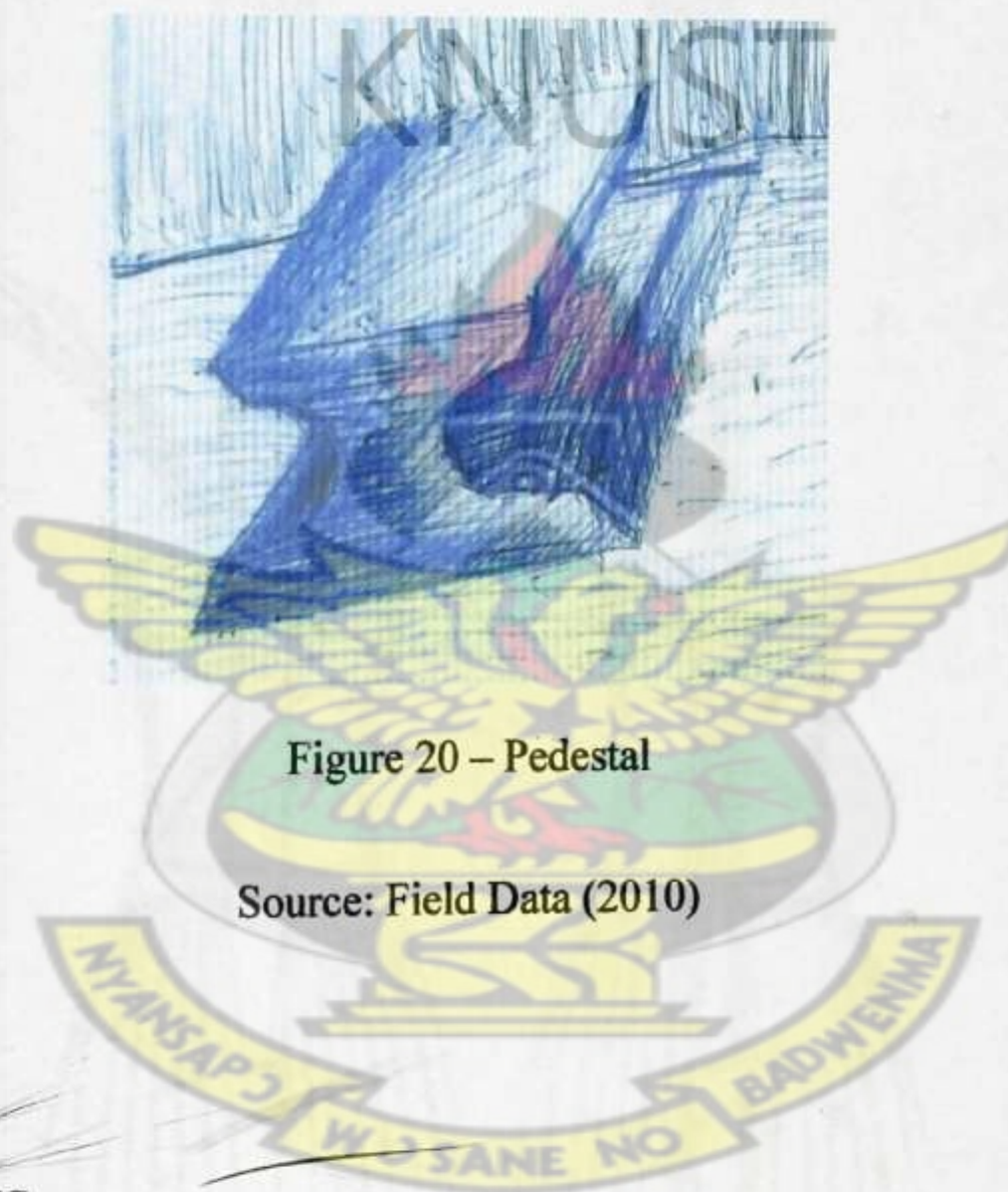


Figure 19: Final Design of the Costume

Source: Field Data (2009)

Having had the apparel design completed, the pedestal design also followed with inspiration taken from the central motif (indigo shell fish) on the motif board. Edges of an inverted form and the original were merged at the base to create the platform. Some contours were applied to add feminish touch and passion so as to relate with the monument fittingly. The base was extended a little from the upper part for the facilitation of stability.

The Figure 23 below depicted the pedestal:



### 5.2.1 Flat Drawing

Flat drawing was a graphical and instructional illustration used to interpret and guide the execution of the design into artefact. As part of specifications, the flat drawing reconstructed the design showing all style lines and constructional details with the exception of colour. By its name, the flat drawing portrays garments without human models. In its presentation, thick lines were used to illustrate all outer lines while thin

lines were used to represent inner lines and then, all hidden lines were shown with broken lines. Ideally, the flat drawing shows the front and back of the design and where necessary, the sides as the design may require. In engineering, the flat drawing could pass for *isometric projection*. The adopted silhouette from which the flat drawing was composed was from Metric Pattern Cutting (Aldrich, 2002). Illustration of the flat drawing for this monumental costume is depicted below by Figure 24:

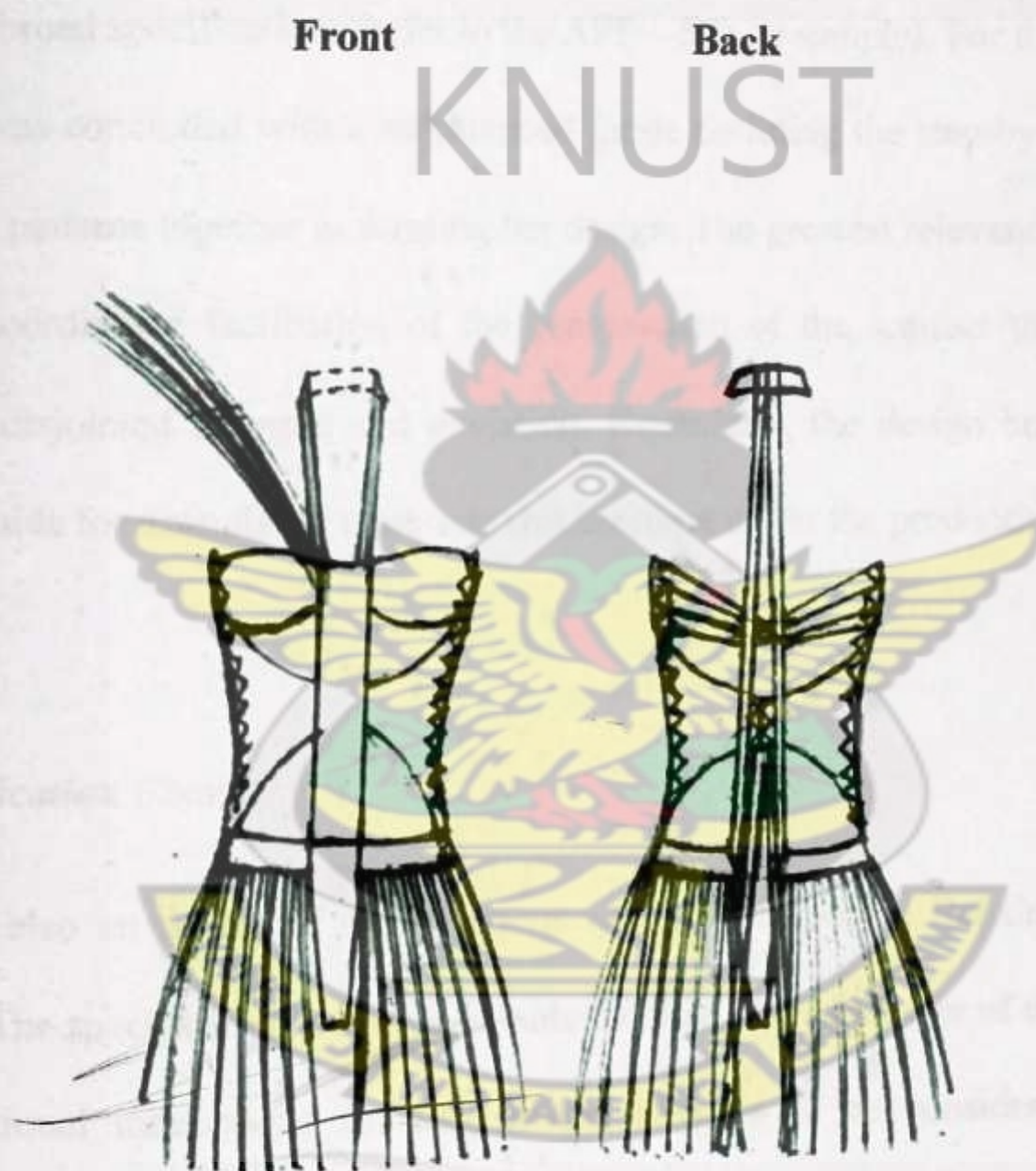


Figure 21 – Flat Drawing

Source: Field Data (2009)

### 5.2.2 *Design Brief*

Design brief is a written statement that summarises the structure and nature for the composition of the costume. As footnote, design brief also presents a guide on the processes for the construction of the costume and factors considered for interpreting special features of the design for construction. In design briefs, recommendations on alternative materials, colours, and constructional strategies and effects are usually spelt out as part of the broad specifications (refer to the APP – 5 for a sample). For this exercise, the design brief was concluded with a summarised guide outlining the step-by-step processes of putting the patterns together in forming the design. The greatest relevance of the design brief is the coordinated facilitation of the construction of the artefact that reduced the tendency for disjointed seaming and deviation. Essentially, the design brief served as a preparatory guide for assembling materials and instruments for the production.

### 5.2.3 *Specification Chart*

This chart is also an aspect of specifications which involved the flat drawing and the design brief. The specification chart was a table that had a reduced size of the flat drawing and constructional instructions showing unique features to be considered during the manufacturing of the apparel. Additionally, this chart outlined all the materials (specifications and quantities) required for the formation of the design. Regarding this exercise, in the specification chart, the flat drawing was reconstructed and attached with it were list of fabrics, trimmings, and notions to be used (refer to the APP – 6 for a sample). Specification charts get formed based on the provisions of design briefs. As a matter of

fact, per this chart, projections of all items required for the production of costumes could be established for efficient procurement.

#### **5.2.4 Cost Sheet**

Concluding the specifications was the cost sheet which was a sheet outlining all inputs factored in the manufacture of the artefact. Foreboding economic viability of commercial artefacts cannot be underestimated, for this marks the greatest incentive for efficient and effective production. Specification chart covered both direct and indirect inputs spanning from the commencement of the research to the conclusion. In the cost sheet, prices were attached to the list of all materials considered for the work and totalled. Mark up was added to the total cost as profit leading to the fixation of selling price. It is worth to note that the materials assembled, costing, and pricing were all designed to commensurate the customer profile of the client. The essence is that, the overall economic value of the artefact should be reflected in the satisfaction that the client should attain from the product and then, the financial reward to the composer for a good job done (refer to the APP – 7 for a sample).

### **5.3 Resources for the Manufacture of Statue and Apparel**

#### **5.3.0 Material**

The material resources were the type that could be described as the tangible inputs for the making of the art work. It was categorized into two (2): the direct materials and the

tools/equipment. The direct materials were the materials that went into the production of the artefact and formed part of the work. In other words, it got dispensed partially or completely as it formed part of the final product upon use. The materials involved here were – wood, glue, water, fabrics, trimmings, and notions. The fabrics were the main textile materials which were obtained from the corn husk and the plantain leaf and constructed into braids. The trimmings were other textile base decors that were used in making a good finish for the costume and also to add colour to the work. Primarily, the trimmings were to finish the edges and seams of the apparel. Trimmings used were cotton bias binder and sewing thread. Other direct materials were notions which complemented the fixation of fastenings. Coconut leaves, broom sticks from coconut leaves, wooden beads, and eyelets were the notions used. Actually, the beads, leaves, and broom sticks from coconut served as dressing accessories for the embellishment of the costume. Other materials were POP, sand, cement, paints, thinner, spray paint, and putty filler.

Table 9 – Tools and Equipment

Fabric/Apparel Manufacture		Monument Casting and Carving	
Nes	ITEMS	Nes	ITEMS
001	Tailor's Tape Measure	001	Metallic Ruler
002	Measuring Tape	002	Pair of Pliers
003	Pair of Shears	003	Adze
004	Cutter	004	Hammer
005	Brown Paper	005	Mallet
006	Writing Instruments	006	Chain Saw Machine
007	Broad Table	007	Hook

008	A Set of Computer	008	Axe
009	Digital Camera	009	Sand Paper
010	Push (Drawing) Pins	010	Grinding Machine
011	Manual Needle	011	Iron Rods
012	Dummy	012	Trowel
013	Stiff Polyester	013	Chisel Set
014	Eyelet Punch	014	Paint Brushes
		015	Bucket
		016	Bread Pan
		017	Spade
		018	Broad Table
		019	Pair of Pliers

Source: Field Data (2009)

Tools and equipment were the other aspect of materials that rather served as catalyst to aid the speedy making of the work but were retrieved upon the completion of the project. Different instruments were employed for the material experimentation and the artefact manufacture. As a matter of fact, in the previous chapter, the implements utilized for the experimentation were treated. For the apparel and the sculpture manufacture, the tools and equipment adopted were grouped and presented as portrayed above by Table 9.

### 5.3.1 Technology

The discipline dealing with the art or science of applying scientific knowledge to practical problems could be termed as technology. Technological application was initially applied as

ergonomics where scientific and artistic principles were applied to focus on the design concept. The scientific aspect involved the qualitative deductions and inferences from the data adduced from the research. From the research, conclusions were summed into principles and elements of design. The picturesque portrayal of the design was done through computer graphics aided by scanner, personal computers, cellular phone, and printer. Adobe Photoshop and Microsoft Word were the predominant software used. The former was used for the restructuring and presenting all the graphical images and the latter was used for the texts before printing was done to complete the work.

Subsequently, the apparel was constructed through manually braiding the corn husk and the plantain leaf into yarns and then hemming with manual needle and fine cotton thread. Additionally, the statue for which the clothing was to be clad was also cast and carved manually through basic casting and carving tools like broad table, bread pan, trowel, spade, pair of pliers, chisel, hammer, adze, hook, and sand paper. The equipment used were chain saw machine and grinding machine.

### 5.3.2 Finance

Financial aspect of the whole resources generated tremendous excitement as mobilization of timeous funds were not forth-coming as simple dependency on the meagre income of the researcher retarded expedite production for the latter could not secure study leave with pay. Initial logistics were fuel, internet services, transportation, dry cells, scanning, photocopying, and printing, and interesting enough; these expenditures abided till the completion of the work. Later, other key expenditures in lodging, feeding, telephone

services and log were incurred. The totality of the expenditure has been structured in the cost sheet found in Appendix (APP – 8).

## 5.4 Construction of Statue

### 5.4.0 Model

The model was a figure upon which the costume was to be clad. The choice of the model had its source from the corporate philosophy and orientation of La Palm. The key factors under consideration were the business strategic orientation and philosophy of the entity and that was “*pleasure hotel*”. Also for consideration were tradition, class, uniqueness, and visibility relating to the hotel. Others noted were the milieu designed to be luxurious, beautiful, graceful, passionate, romantic, and natural. In all of these, modesty and decency were upheld as La Palm had earlier emphasized that quest for passion and romance should not be misconstrued for obscenity and lewdness. From the above, several poses from various models that fit into the listed qualities were studied out of which one was chosen following the supervisor’s approval. The pose is made of plump female of size 14 (petite) with vital statics in the ratio of 34:28:38 (bust, waist, and hip respectively). The adoption of the strategic anthropometry was essential for the attainment of typical African features that the model was required to possess. The statue was partially in a full-size as at it was severed at the knees where it shall be placed on a wooden pedestal for display. It was so done as the emphasis was on the facial features likewise the torso dropping towards the hip. Additionally, there was the need to keep the monument relatively light to make handling more convenient. Upon finalizing the image, the real sculpture work began.

Below are illustrations of moulded clay, plaster of Paris cast, and concrete cast as illustrated by Plates 5.4(a), 5.4(b), 5.4(c), and 5.4(d) respectively.

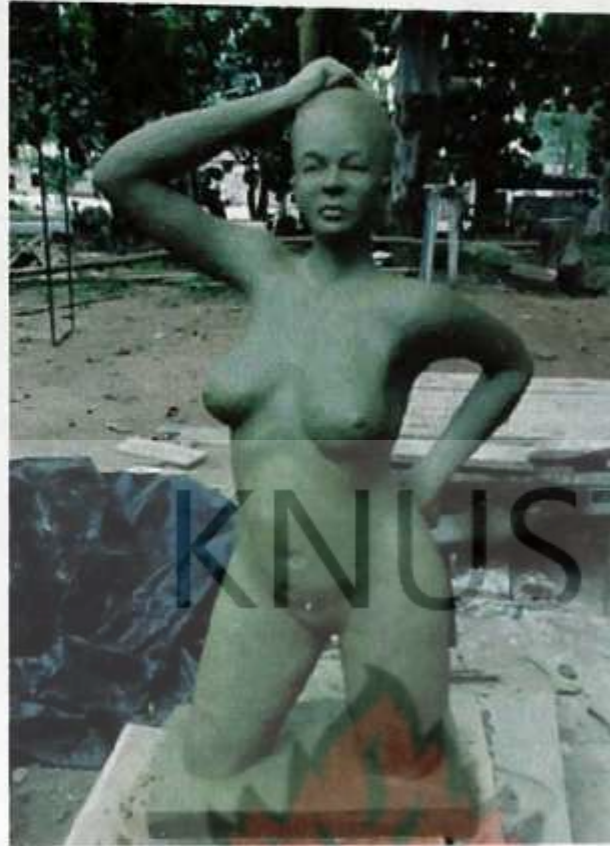


Plate 5.4(a) Clay Moulding of Model

Source Field Data (2009)



Plate 5.4(b): Model Casting Concrete

Source: Field Data (2009)



Plate 5.4(c): Mould

Source: Field Data (2009)



Plate 5.4(d): Cast and Polished Model

Source: Field Data (2009)

### 5.4.1 Statue Casting

To make the statue, the first step was to mobilize the materials and some implement required for the cast. Following that, the armature constructed with iron rods and wire mesh was positioned to reflect the size and the pose of the model. Clay was added to the armature to derive the form for scrutiny where the supervisor critiqued and advised. Reshaping was done eight times to reflect the counsel of the supervisor after which the mould was done with POP. Two days from then, the POP became fairly dried allowing the casting to be made. Its initial step was the positioning of iron rods and the wire mesh before the mixed mortar was poured into the cast to fill. Having certified that all porousness was covered, the form was allowed to dry. After the third day, the item was removed from the POP and a mixture of cement and putty filler were used to correct all the flaws that evolved from the casting after which sand papers (in grades of P 60 and P 120) were used to polish it pending painting.

Another major factor worth considering was the need to have the colours of the apparel to have mild correlation with colour effect of the monument and the pedestal. With the focus on Africa, the textiles and apparel were structured to be in the natural state and hence, required the need to have the colours blending well with that of the monument. Favoured colour was mild gold over bronze as though the design is not intended to look real, there was also the need to have it as African as possible and since gold over bronze is a colour that bear some semblances with the average complexion of Negroes and African cultures; it was thus considered appropriate to use. To have that well executed, matt black was used for the foundation to optimise the hue and lustre of the colour.

### **5.4.2 Pedestal Carving**

Upon the completion of the apparel and the monument, the formation of the pedestal followed. White log was chosen because it was considered very strong and reasonably stable. Also, that was the material that has had significant seasoning available at the time. Chain saw machine was used to cut the log into basic shape before the details were engraved. Following that, grinding machine was used to have the cast polished and so sanded. Matt black colour was then applied as usual before the finish in dark coffee colour. The chosen colour shared some relationship with the main colour of the monument but also made a visible contrast to add to the appreciation and appeal of the artefact.

## **5.5 Fabric/Apparel Manufacture**

### **5.5.0 Fibre Preparation**

The fibre preparation was the first of the three major steps involved in the making of the fabrics. Firstly, corn husk was procured from the market and the farm of CRI; in fact, the husks were supposed to be sold to makers of Ga kenkey: a local delicacy. There was significant sorting to ensure that the length of the materials were reasonably long and had common colour and texture. The husks were separated from the empty cob and kept at a cool and dry place so as to prevent moisturizing it or getting it to become overly dried either of which could have destabilized the husks there by deviating the expected outcome. Next was the plantain leaf that was obtained from the backyard garden of the researcher. The leaves were extracted from dead trees that had not totally got deteriorated. The green broad leaves that had already shrunk and turned brownish as well as the stem, roots, and

the decayed parts of the columns were picked. The adjoined broad leaves and the roots were separated from the thick and bouncy part of the leaves which appeared like bast (columns). The columns of the leaves were the main materials required and the rest were discarded. The columns were placed under a shaded but airy area to rid it of moisture and fungi/bacteria activity. Like the corn husk, the plantain leaf is also used for packaging Fante kenkey (ntew, akorankoran, and nsiho). Other traditional delicacies like etsew, fomfom, and boodow are also wrapped in the plantain leaf. Plates 5.5(a) and 5.5(b) are dried corn husk and plantain leaf respectively.



Plates 5.5(a) and 5.5(b): Dried Corn Husk Cobs and Dried Plantain Leaf Sheets respectively

Source: Field Data (2009)

The procured corn husk and plantain leaf braids were chopped into strips with the aid of a pair of shears and measuring tape as shown by Plates 5.5(c) and 5.5(d). The strips that could be taken for fibres were matched to guarantee homogeneity. The width was 1.2cm for the corn husk but that of the plantain leaf fluctuated between 0.7cm to 1.2cm to reflect the thickness of the leaf. This is significant so as to achieve evenness during the braiding

and subsequently, during the fabric and artefact manufacture. The evenness adds to the appreciation of the texture and the total aesthetic values of the artefact. The importance of the even strips enhanced the twisting and braiding there by reducing the stress that the fingers were to endure. Additional evenness was obtained through the attachment or detachment of thin strips on demand to maintain a fairly balance braid. This also pointed to the fact that there were a lot of stray strips that were veered off consciously to maintain the standardized form.



Plates 5.5(c) & 5.5(d): Corn Husk Strips and Plantain Leaf Strips respectively

Source: Field Data (2009)

### 5.5.1 Yarn Formation

Braiding into braids/yarns followed the conversion of the corn husk and the plantain leaf into strips. The first step was to identify the midpoint of the first strip and subjected it to sustained twist and had it turned whilst still holding onto the sustained tension for the edges to overlap. The left thumb and the fore finger were used to tightly hold the two (2) edges together while the right fingers were used to twist the right strip and placed on the left strip while gripping with the left thumb and the fore finger to forestall unravelling. The

left strip was treated likewise and the process started again till a long chain of braid was formed as revealed by Plates 5.5(e) and 5.5(f).



Plates 5.5(e) & 5.5(f): Non-Sheared Braided Corn Husk Strips and Non-Sheared Braided Plantain Leaf Strips respectively

Source: Field Data (2009)

In between the braiding, numerous stray chaffs emerged most of which were done deliberately to attain and maintain homogeneity. Constant braiding led to dexterity such that, by the mere handling of the braid, the researcher could determine if the braid is deviated or not from the pre-determined standards. If it was noticed that the braid was becoming broader, minute straps were extracted out while addition of minute strips were added upon noticing that the braid was becoming thinner. The construction took this pattern to aid the maintenance of uniformity of the braids and shaved off with a pair of shears after the completion of the braiding process as displayed by Plates 5.5(g) and 5.5(h).



Plates 5.5(g) & 5.5(h): Sheared Braided Corn Husk Strips and Sheared Braided Plantain

Leaf Strips respectively

Source: Field Data 2010

### 5.5.2 *Fabric/Apparel Construction*

The braids were then converted into fabrics according to the forms of the patterns for the construction of the attire. The first to be made was the brazzier after which the pant and the sides of the costume were made. Being custom made attire, there was the need to make patterns by modelling and the first to be formed was the brazzier, pant, and the trunk with stiff polyester which has been portrayed by Plate 5.5(i). Stiff polyester was used because of its texture and stability as it needed to stay firmly for the braids to be stitched around it with slip hemming to attain the shape of the patterns.



Plate 5.5(i): Modelling of Patterns

Source: Field Data (2009)

The modelled patterns were labelled and tagged. The edge of the braids was fixed over the pattern as portrayed by the polyester to assume the shapes of the patterns. Slip hemming was used to fix the braids as it got coiled into fabric/apparel where it took the shape of the proposed design. In the process, the edges of the fabric/apparel were tacked to the pattern so as to stabilize the construction. Having satisfied the design specifications, the tacks were unpicked to separate the polyester (patterns) from the newly constructed fabric/apparel. The new apparel was fitted on the model to ascertain flaws which were repaired. The same procedure was used to fix the accessories at the left bicep. Wooden beads were strung over the strings for the neck and the pair of strings was knotted at the back of the neck. The illustration below shows the process by which the fabric/apparel was formed where slip hemming was used to fuse the braids together whilst ensuring that it reflected the shape of the pattern as shown by Plate 5.5(j).



Plate 5.5(j): Fixing of Braids over Patterns

Source: Field Data (2009)

The Table 10 below exhibits the step-by-step process by which the costume was formed on the monument.

Table 10 – Apparel Construction

APPAREL CONSTRUCTION PROCEEDURE	
Nrs	ITEMS
001	No seam allowances provided
002	Fixed patterns of the CF onto the flat broad table and secured it with sellotape
003	Meandered cornhusk braid as the pattern instructed and secured it with drawing pins

004	Hemmed braids to complete construction of the CF
005	Positioned patterns of panties (front and back) and secured it with sellotape ensuring that they are joined at the base
006	Fixed corn husk braids at the crouch and secured it with drawing pins
007	Hemmed the braids to complete the crouch as directed by the patterns
008	The waist band patterns were joined at the sides and secured with sellotape
009	Plantain braids were positioned with drawing pins and hemmed into place
010	The crouch and the waist band were attached according to the pattern instructions
011	Like the panties, the back and front patterns of the bra were joined but this time, at the sides
012	With the aid of sellotape, patterns of the bra were fixed on the bust of the dummy
0113	Coiled corn husk into place and secure it with drawing pins
014	Hemmed the braids into place to form the bra
015	The patterns of the sides began with the pattern of both back and front replicated twice
016	The patterns were fixed on the flat broad table and secured with sellotape
017	As usual, the braids (plantain) were moulded into place securing it with drawing pins
018	The plantain braids were hemmed into place
019	The semi-finished dress was fitted on the dummy and adjusted to fit
020	The sides of the bra, sides, and the panties were merged as the patterns ordered
021	Eyelets were fixed at the side seams that were disjointed through eyelet punch
022	Thongs made from the corn husk were used to weave through the eyelets to complete the apparel

Source: Aldrich, (2002), Hagar, (1989), and Field Data, (2009)

## 5.6 Showcasing

Showcasing has always been an integral and essential aspect of art but unfortunately in this part of the world, it is often overlooked. In some documentation, it is written as presentation skills. Really, showcasing is basically about mounting exhibition to an interested audience on an artefact or artefacts and in this context, was done twice. That is, presentation for assessment and presentation at La Palm. The Word Web Encyclopaedia, (2008), defines showcasing as giving an exhibition of something to an interested audience. In complement, the Britannica Encyclopaedia, (2010), discusses it as to exhibit especially in an attractive or favourable aspect. According to Florian, Kronkright, and Norton, (1990), p. 197, essential general standards and recommendations for handling artefacts in storage and display is indispensable [see Blackshaw (1982), Blackshaw and Daniels (1979), Graham-Bell (1986), Greene (1978), Johnson and Horgan (1979), and Thomson (1978)].

Firstly, the real work was ensuring congenial conditions that have the tendency to preserve the artefact much as facilitating the resonance of romantic and aesthetic appreciation to pervade. The congenial conditions are: visible and well lit area; well-ventilated area; no direct illumination of sunshine; comfortable room temperature; free of Moisture; free of sharp instruments; free of very volatile substances; fire extinguisher should be within the precinct at about 5m to 10m.

The earliest presentation is the one for assessment which is expected to bear strategic conveyance of the customer profile findings into physical structures in and around the artefact to make La Palm practical and real. The impact expected from the presentation requires apt planning and organisation. By the virtue of this, the showcasing which is the

only aspect of the project yet to be executed shall be done according to the following pattern provided in Table 11:

Table 11 – Presentation

PRESENTATION	
Nrs	ITEMS
001	Make a space of 1.5m <sup>2</sup> for make-shift floor
002	Fix tiles on the floor
003	Locate the centre and 0.5m towards the back of the make-shift floor
004	Mark the position
005	Fix the monument on the position

Source: Field Data (2009)

At La Palm, the art work shall be placed at the main entrance of the lobby that links the reception, hall, and the restaurant to catch the maximum attention to complete the second phase of the showcasing. For both presentations, the artefact shall appear in the form as illustrated on plates 5.5(k) and 5.5(i).

In concluding the chapter, it should be reiterated that production mechanism applied was methodical where preceding production levels actually fitted into the next on demand. The principle was to guarantee tremendous efficiency and effectiveness and this underscored the pattern by which the complete 'Artefact Production' was executed. 'Customer Profile' was the foremost assignment and by design, it solicited information about the target clientele which in this case was La Palm Beach Resort, Accra. The findings of data collated were actualized into patterns and presented according to principles of design

through 'Idea Development'. The 'Idea Development' involved four steps from which innovative and creative patterns were developed into feasible elements for the work. The composites of the idea development were the mood/theme board, motif board, trend board, and the fabric/story board. The feasible elements for the work came in the form of lines, shapes, colours, textures, silhouette, space, plain, value, uniqueness, and mystery.

With the innovative and creative patterns in hand, 'Designing' began. It started with style sampling where varieties of similar styles on models were done focusing on one that bore bits and pieces of the others and had features that bear the essence of the project. Specifications being detail constructional procedures of the design were worked out through the flat drawing, specification chart, and the design brief. The cost sheet was used to quantify all the resources invested and priced with a mark-up for the art piece. As the name connotes, the resources were virtually all the inputs factored in the production of the project. It was organised into three broad areas – material, technology, and finance. The coordinated combination of the resources reduced many of the limitations that otherwise could have made this endeavour an impossibility.

Immediately after having the resources in place, the direct manufacturing of the fabric/apparel took off. Of interest was the fact that, the construction of the fabric and the apparel was inextricably bound. While converting the braids into fabrics, the apparel was being manufactured in the process. Ending the production was 'Showcasing', the section that was duly endowed in presentation skills. First, the location was found: where it was certified that all established conditions were instituted after which the pedestal was positioned. Following the above, the dressed monument was placed rightly on the pedestal

to complete the presentation. The presentation which has been exhibited in front and back poses has been illustrated by Plates 5.5(k), 5.5(j), and 5.5(l).

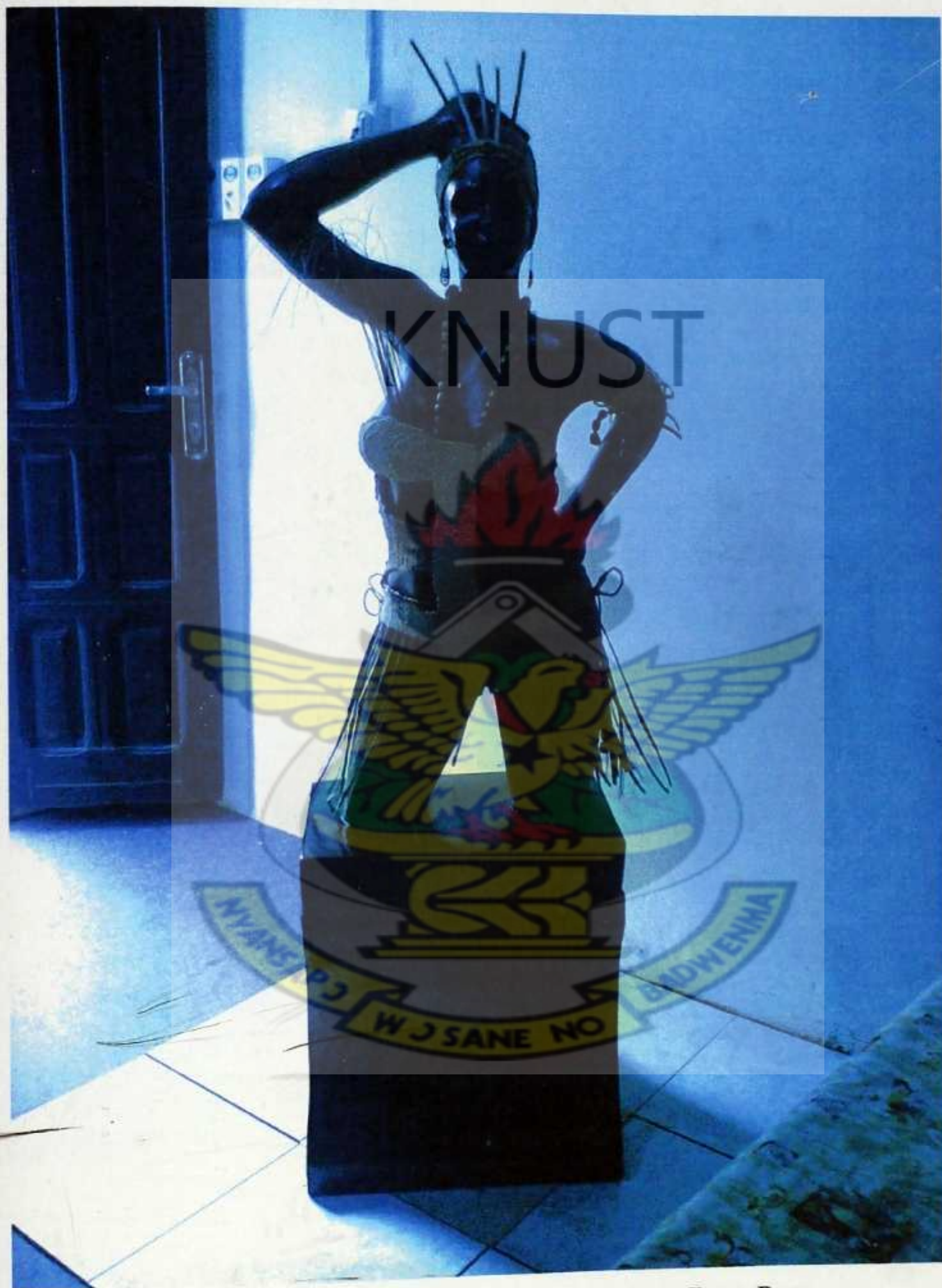


Plate 5.5(k): Displayed Dressed Monument – Front Pose

Source: Field Data (2011)



Plate 5.5(l): Displayed Monument – Right Side Pose

Source, Field Data (2012)



Plate 5.5(m): Displayed Dressed Monument – Left View Pose

Source: Field Data (2011)

## 5.7 Summary of Discussion

The production of “Combination of Textiles, Fashion, and Sculpture for Unconventional Costume Mounted on Statue” was very revealing exercise of which every bit of it was phenomenal. The customer profile was an illustrative summary of unique attributes of the clientele that facilitate in defining the total personality of La Palm. Its relevance was to aid in crafting well-tailored costume to meet required specifications. The customer profile though implicit, was probably the most significant element for it reduced the totality of the client into workable units. Those units were symbolized with patterns in the idea development.

From the findings, it was noted that hotels are varied and in basically two categories: business and pleasure. With the focus being sensuous but non-obscenity, pleasure resort was chosen. Based on this, the questions for the interviews were reconstructed to elicit information on the requirements of pleasure hotels vis-à-vis the objectives of the study.

The idea development was particularly fashioned to interpret the variables of the customer profile graphically. To reflect the customer profile and the objectives of the research, a theme was crafted: “*Splendour*”. Basically, splendour connotes magnificence, yet it is also endowed with grace and romance leading to the choice of the title “*Splendid Coral*” for the mood board. Hence, the styling and design were directed to reflect the passion of splendour. Using Adobe Photoshop to extract the motifs was a very useful application as it aided in obtaining the patterns in their natural state with little distortion: a phenomenon associated with manual work. Additionally, the refinement of patterns for innovation and inventiveness was enhanced in the sample and fabric board.

Also, the varying styles and designs drifted towards a more acceptable design as the outcome of the project. Firstly, the costume was very romantic while the model for the monument was equally sexy and interesting. However, neither of them was offensive, for it was deduced that, La Palm primarily operates as a pleasure hotel but it also does some executive functions as seen in business hotels. As such, the target was to make an artefact that has tremendous aesthetic values and passion but not salacious.

The specifications did reveal a major challenge of determining the cladding and fastening of the costume. Upon careful reflection, thongs were used to lace the sides and the neck towards the back. Eyelets were fixed to serve as channels for the running thongs without which the braids and costumes would have unravelled.

Originally, the statue and pedestal were to have been made from wood, but for obvious reasons concrete was used in place of wood. In that, wood takes eight to sixteen months to season properly. Well, the pedestal was however carved and just four months afterwards, it developed cracks but was repaired by cutting and joining. To have a light-weight monument, POP was suggested but because it is generally weak, concrete was adopted. The greatest challenge was the mechanism to reduce the porousness of the cast and since there was not a custom made poker vibrator for such purpose, manual pressure was enforced. Eventual effect was several pigeon holes emerged and were remedied with putty filler. Sanding with sand paper under the support of the palm created undulations. It was later discovered that, scraping the surface of the putty filler with a broad hacksaw blade could level the surface before polishing with micro sand paper wrapped on soft wood.

The making of the fabrics and the apparel required tremendous innovation and creativity as the manufacture of the fabrics also led to the manufacture of the apparel. It was so because

there was the need to have homogeneity in the sizes of the braids. Also, the fabric formation was to take the dimensions and shapes within the apparel accurately. To achieve uniformity, the senses of touch and sight were used optimally where deliberate stray strips were created to maintain fair uniform size. The patterns of the garment were modelled on the monument to assume the exact proportions of the shape of the monument. With slip hemming, the braids were fused together as fabrics and patterns ensuring that these assumed the shapes of the modelled patterns, the hemming proceeded. Upon completion, finished braids were assembled with further hemming into the apparel. The apparel was fitted to aid the location of faults. Identified faults were remodelled on the monument and hemmed after which the apparel was refitted.

Beyond the above, final finishing commenced on the monument by polishing with micro sand paper after which it was sprayed matt black. This medium reduced virtually all flaws that could not be traced and fixed during the polishing. It also aided in enhancing the sheen of the final colours applied. Originally, bronze was to have been used to spray the monument. The choice of bronze was to have had fair contrast between the monument and the apparel. The colour bronze also reflects complexion that resonate well with Negroes and hence; its appropriateness, since the model was to depict a Black African identity. However, the available spray colours did not have bronze; hence, scarlet enamel paint was applied but the gloss was not pleasant because the expected control of the matt black could not recede the excessive sheen of the scarlet. It is for this reason that bright gold was sprayed lightly over the scarlet producing a light brass colour with minute element of brown underneath.

## CHAPTER SIX

### SUMMARY, CONCLUSION, AND RECOMMENDATIONS

#### 6.0 Summary of the Study

Crafting a costume from corn husk and plantain braids fitted on a petite size 14 female monument for public display was the primary goal of this exercise. The sixteen month project sought to answer three main questions. Should it not be possible to have cheaper and readily available alternative textile materials extracted from wastes as fabrics for apparel making? Could competitive economic advantage not be churned from innovative fanciful costume made from corn husk and plantain leaf? Could textile, fashion, and sculpture not be combined into a common artefact for public display?

To answer the earliest question, the idea of playing around corn husk and plantain leaf evolved where the materials were braided into yarns and tested to ascertain the extent to which they could function as textiles. It was noticed that the two braids shared few differences but many similarities. The corn husk appeared weaker and unstable in water while the plantain leaf on the contrary, appeared stable, stronger, and fairly elastic in water. The two however, were very absorbent and take colorant easily; especially, natural colorants. Also, they were very strong with reasonable tensile strength and resilience but rigid and coarse. Having had the braids to perform as yarns also meant they could be used for fabric and for that matter, apparel.

The conclusion of having the braids being suitable for textiles was not enough as the question of its feasibility regarding competitive economic advantage had to be answered. Corn husk and plantain leaf have been virtually treated as waste in Ghana with the exception of some instances where they are used to finish door mats and then package

food. Acquiring these items is thus rather cheap. Nonetheless, the difficulty was to what exact use the braids should be subjected such that it could rake in respectable economic benefits. As a matter of fact, Ghana has not been doing too well in the textile/fashion industrial sub-sector and according to Quartey (2006), the trend appears to be worsening. Invariably, using these braids to produce usual textiles and clothing might have the status quo prevailing: trade loss. It was for this reason that the idea of unconventional ceremonial costume emerged targeting display at public places. The proposed artefact was also designed to target institutional and individual customers who were quite endowed economically so as to avoid unnecessary inventory cost. Hopefully, this drive could produce a competitive advantage establishing the platform into making Ghanaian textiles economically viable as it were.

The above led to the question of combining textiles, fashion, and sculpture into art piece for public display. Firstly, customer profile and idea development were developed in the attempt of composing well fitted costume and statue. With La Palm Beach Resort chosen as the client, the customer profile was directed at deriving the peculiar attributes of La Palm. It covered aggregately areas that could be concluded as the institutional personality of the client. La Palm was identified to be a highly professional and well organised hotel with its focus on pleasure but occasional deliverer of executive services likewise. The customer profile led to the composition of the idea development which was titled "Splendid Coral". Splendid coral essentially portrayed very beautiful and romantic serene that appeared well organised. Exciting patterns were extracted from the mood board and manipulated into innovative and creative patterns which were further worked out to acquire much more interesting ideas. The patterns were adopted into styling the apparel under the

guide of the trends so as to avoid deviation. Refinement of the styles led to the crafting of the final design.

Following the above, the specifications were fixed to determine how to convert the patterns of the design into real artefact in significant efficiency. It was afterwards that the apparel and the statue were constructed. The manufacture started with the patterns that were modelled on the statue which was cast in concrete. Though laborious and time consuming, the corn husk and plantain leaf were chopped into strips and then braided into yarns of 0.5cm in diameter and 9m in length each. The yarns were hemmed to assume the shape of the patterns. Following the above, the apparel was accessorised and fitted on the statue. Flaws were rectified before the statue was finished by polishing. Colouring added further smoothness, sheen, and beauty to the artefact. The apparel was finally fitted on the statue and placed on the pedestal that was carved. It was carved to add variety and passion.

### 6.1 Summary of Conclusion

The novelty of “Unconventional Textile Fibrous Materials for Costume Mounted on Statue” was phenomenal textile art derivative. The exciting innovation and inventiveness associated with textile art in Ghana has largely been visible in wall hangings; a literally two-dimensional artefact so to speak. However, the composition at the centre of this discussion was intended to generate perception of different effects which basically varied from the known. It became better appreciated based on the fact that it combined three major disciplines of art: textiles, fashion, and sculpture. Designed to stimulate passion, grace, relaxation, and fun, the composition was also directed at resolving major

environmental bottlenecks which many believe to have cascaded into crisis and that was waste.

Incidentally, the textile/fashion sector of the Ghanaian economy has not been fairing well at all; a phenomenon that appears to abide for much longer years than wished for. Actually, this industrial sub-sector (textiles/fashion) is not competitive and the key attributable cause is inadequate innovation and creativity. Possibly, radical revolution could circumvent the trend from rags to riches.

Nevertheless, waste might not be useless after all as according to a Malaysian professor who was a guest for Kojo Opong on Super Morning Show of Joy FM earlier 2011, this very cheap and widely available resource is believed to be generating about 100 billion US dollars in revenue globally. Refusing to utilise the *so-called* resources should make waste practically wasteful with its concomitant repercussions that would not only damage the environment but sustenance of life on the planet.

As regards the findings of the study, it could now be conveniently adjudicated that corn husk and plantain braids can be used to make costumes. This derivative of textile and fashion is actually cheaper and readily available. The innovation of combining textiles, fashion, and sculpture as a common artefact is a possibility. Per the design, the artefact resonates the corporate philosophy and orientation of La Palm Beach Resort.

## **6.2 Summary of Recommendations**

Based on the findings extracted from the deductions and the inferences, the following have been recommended:

- I. Dissertations and projects in schools should be designed to compel students to utilise alternative materials within the environment for the making of varying textile arts.
- II. Waste is actually a good resource and that; the Government should task the academia and the corporate world to jointly work to find alternative use for all bi-products in the country.
- III. Corn husk and plantain leaf are fibrous enough to be used as braids (yarns).
- IV. Corn husk and plantain leaf require further examinations to make them more adoptive in clothing for human dressing.
- V. Corn husk and plantain leaf as it stands now could be used as trimmings and notions for apparel and accessory manufacture.
- VI. Corn husk and plantain leaf could be used in other clothing forms like draperies, door mats, and bed mats.
- VII. Blanket stitches should be employed to secure eyelets to prevent unravelling of braids and distorting apparel.
- VIII. The general public through braiding and hemming could use the braids to embellish home decors to add lustre and colour.
- IX. Maize, plantain, and other food crops should not be treated with chemical fertilizers, fungicides, herbicides, and pesticides to avoid pollution.
- X. Additionally, the braids treated with domestic salt and used as kitchen curtains and pad could serve as better insulators.
- XI. Cladding apparel made from corn husk and plantain leaf on size 12 petite female statue is an artistic novelty.

- XII. Saw dust needs not be disposed by burning again as it could serve as a major material for casting sculpture pieces.
- XIII. Saw dust shall be used to cast and compose a new monument for another flamboyant costume with the intention of creating a novelty artefact from waste entirely.
- XIV. Research into automated systems for braiding and seaming the materials could revolutionised these new textiles.

# KNUST



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## APPENDIX

### GLOSSARY

**Kyɛnkyɛn** – This was an ancient native Akan fabric made from matted bark of trees.

**Kente/kete** – A fanciful traditional Ghanaian fabric believed to have evolved from the Ashantis and the Ewes.

**Adanudo** – An Ewe kete design derivative

**Fugu** – Traditional Ghanaian thick smock that originated from the North of the country and is made from cotton, rayon, or leather

**Buba** – Traditional blouse that is believed to originated from Nigeria.

**Kaba** – Traditional bodice that combines with a native skirt named slit to form female costume for traditional events in Ghana.

**Dzakoto** – It is huge knickers believed to have originated from the Eweland and worn by men in Ghana

**Ntama** – This is local Ghanaian tunic derivative used largely for traditional and social events.

**Amonsee** – This is a type of T-bandage used as pantie in traditional Ghana.

## APP 1 – Sample Questions for Interview at La Palm

### QUESTIONNAIRE

- i. What is the vision of La Palm?
- ii. What is its mission statement?
- iii. What is its philosophy?
- iv. What type of clientele does La Palm attract?
- v. What kind of passion does La Palm attaches to its milieu and front desk? (please tick the ones that fit your philosophy)  
Friendliness.....Romance.....Erotic.....Beauty.....Pride.....Somber.....Grace.....Any Other.....
- vi. How much of impact could such attributes in the above list which are associated with your establishment influences your business?
- vii. How much of concern are you about environmental preservation?
- viii. Any practical measures being undertaken to preserve the environment?
- ix. What strategic factors do you consider in your marketing?
- x. How much of appeal should an artifact combining textile, fashion, and sculpture have on your corporate marketing strategy?
- xi. If such an artifact was to be crafted for your establishment, what inputs would you wish to have considered?
- xii. What price range would you prefer if the artifact to be made was sold to your enterprise?  
US\$10,000.00 – US\$20,000.00..... US\$20,000.00 – US\$30,000.00..... US\$30,000.00 – US\$40,000.00..... US\$40,000.00 – US\$50,000.00..... US\$50,000.00 – US\$60,000.00.....

#### Personal Particulars:

E-mail: [ken.sal\\_boat@yahoo.com](mailto:ken.sal_boat@yahoo.com)

Telephone: 031-35013, 024-4581650, 020-2458295

Source: Field Data, (2009)

## APP 2 – Application for Introductory Letter to La Palm

Department of Industrial Art

Faculty of Industrial Art

College of Social Science

KNUST

January 12, 2010

Dear Head of Department,

### LETTER OF INTRODUCTION

I wish to request from your office a letter as captioned above to aid in the investigations being conducted to complete my project work. This has been necessitated based on the fact that some data should be extracted from the Holiday Inn, KIA, Accra which is the focus of the case study of my project work. In an earlier contact, the receptionist at the lodging facility informed me to see the Human Resources Manager and as protocol demands, I would wish to approach that manager officially leading to the application for this letter.

I hope this letter shall be approved.

Yours faithfully,

Kenneth Bright Boateng.

# APP 3 – Introductory Letter to La Palm Beach Resort

**DEPARTMENT OF INDUSTRIAL ART**  
**COLLEGE OF ART AND SOCIAL SCIENCES**  
**KWAME NKRUMAH UNIVERSITY OF SCIENCE**  
**AND TECHNOLOGY, KUMASI**

**SECTIONS:**  
Ceramics  
Textiles  
Metal Product Design



**Office of the Head**  
P.O. Box U.P. 50  
Kumasi - Ghana  
Tel: +233-51-60349

CA/IA/83/VOL.2

22<sup>nd</sup> January, 2010

**THE HUMAN RESOURCES MANAGER**  
**LA PALM ROYAH BEACH RESORT**  
**LA-ACCRA, GHANA**

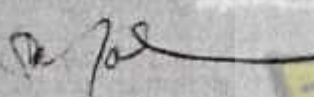
**KNUST**

**LETTER OF INTRODUCTION – KENNETH BRIGHT BOATENG**


This is to introduce to you the above-named MFA(2) Textiles student in the Department of Industrial Art, College of Art and Social Sciences, Kwame Nkrumah University of Science and Technology, Kumasi.

He has expressed the interest to come to your establishment to seek information to help him write his project topic - "Unconventional Textiles Fibrous materials for Monumental Costume"

I would be grateful if you could give him the maximum co-operation and assistance.

  
**J.K NSIAH**  
**HEAD OF DEPARTMENT**

**HEAD**  
**Department of Industrial Art**  
**College of Art and Social Sciences**  
**KNUST**  
**KUMASI-GHANA**

  
7-2-10  
Please for your approval  
before we give out any  
information.  
Thanks  
Kunderuf  
2/2/10

0244581650/0202458295

Email: [industrialartdept@knust.edu.gh](mailto:industrialartdept@knust.edu.gh) Fax: +233 (0)51 60364.

Source: Department of Industrial Art (KNUST), (2010)

## APP 4 – Personal Application to La Palm Beach Resort

The Human Resources Manager

La Palm Royal Beach Resort

La – Accra, Ghana

December 28, 2009

Dear Human Resources Manager,

### **LA PALM ROYAL BEACH RESORT FOR THE CASE STUDY OF MY RESEARCH**

Kenneth Bright Boateng is my name and I am a Senior Instructor at the Fashion Department of the Takoradi Polytechnic. I am also undertaking MFA Textile Design programme at Kwame Nkrumah University of Science and Technology, Kumasi. My project work is entitled: "Unconventional Textile Fibrous Materials for Monumental Costume". It is essentially about the using of biodegradable waste (dried corn husk and dried back of plantain stem) as textile materials for the development of yarns. These yarns are subsequently to be used in making ceremonial apparel for cladding a carved female model to be positioned in lobbies, hallways, halls, auditoriums, and living rooms.

Since the ultimate artifact should impact positively on general society, the central lobby that houses the reception of La Palm was chosen as part of the case study because of its international and pro-western appeal. Hence, I will need to access the profile of La Palm as 'client' (in this context) and produce the apparel and the carved sculpture piece according to its specifications. This is to afford me the opportunity to answer possible questions relating to the research during the project defense. It also the basis for which I am approaching your office for assistance having spoken with one of the receptionist at the front desk on telephone last Saturday. The courteous staff advised that, I should rather apply to the Human Resources Manager for approval before such an exercise could be undertaken. It is for this reason that I am using this medium to seek your indulgence so that I could meet you on this exercise. You may find attached some sample questions that I will like your office to humbly answer if I should get the opportunity to meet you.

It should be much appreciated if this request is granted.

Yours faithfully,



Kenneth Bright Boateng.

(Index No: PG1711007)

Source: Field Data, (2009)

## APP 5 – Design Brief

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF SOCIAL SCIENCE – FACULTY OF ART

DEPARTMENT OF INDUSTRIAL ART

DESIGN BRIEF:

Date: 27, 2010

Name of Student: Kenneth Bright Boateng

Index Number: PG1711007

Design No.: KBB001

Pattern/Marker Number: KBB001

### DESIGN BRIEF

N <sub>os</sub>	ITEMS
001	The patterns are six (6) in all
002	Patterns should bear no seam allowances
003	Three (3) for the back and three (3) for the front
004	Corn husk braids should be used as thongs for trimmings
005	Vilene is not to be used
006	Only eyelet to be used as notions
007	Braids to be used as thongs for fastening the bra, sides, and panties
008	The centre front, brazzier caps, and the crouch of the panties should be constructed with corn husk
009	The rest to be fixed with plantain leaf
010	Thongs to be made with plantain leaf
011	All stitches to be manually done with various derivatives of hemming
012	Apparel to be fitted before finishing

Source: Field Data, (2009)

DEPARTMENT OF INDUSTRIAL ART

SPECIFICATION CHART

Date: March 27, 2010

Name of Student: Kenneth Bright Boateng

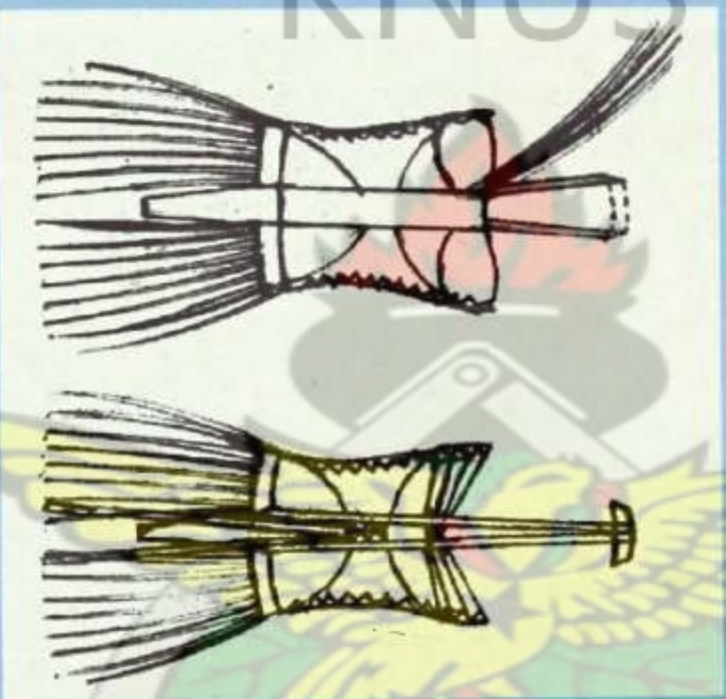
Index

Number: PG1711007 Design No.: KBB001

Pattern/Marker Number: KBB/P/001

Season: General Size: Ideal Size 12 Fabric: Corn Husk and Plantain Leaves Price (Px) Range: GHc50,000.00

ITEMS



Designer's Notes:

Notes (Block Caps):  
CUSTOM MADE FOR THE IDEAL SIZE 12 SILHOUETTE. FASTENINGS SHALL BE AT THE SIDES IN THE FORM OF LACING THROUGH EYELETS. THE HEM STRIPS TO BE TREATED AS ACCESSORIES

APP 8 – Specification Chart

Measurements	Rqd.	Flat Drawing (Front and Back Views)	Designer's Notes:
Front Length – CF/Nape to Hem	24"/61cm		<p>Notes (Block Caps): CUSTOM MADE FOR THE IDEAL SIZE 12 SILHOUETTE. FASTENINGS SHALL BE AT THE SIDES IN THE FORM OF LACING THROUGH EYELETS. THE HEM STRIPS TO BE TREATED AS ACCESSORIES</p>
Back Length – CB to Hem	12"/31cm		
Bust Line	32"/82cm		
Across Front	18"/46cm		
Across Back	14"/36cm		
Nape to Hem	36"/92cm		
Hip	34"/87cm		
Neck Straps	36"/92cm		
CF to Waist	8"/20.5cm		
Thong for Lacing at the Sides	45"/114cm		
Hem Strips (Waist to Hem)	14"/36cm		
CB to Waist	8"/20.5cm	F/Pocket Depth	Nil
		Seam Allowance	Nil
		Hip	8"/20cm
		Upper Hip	4"/10cm
		Hem Width	Nil
		Skirt Length > Waist	14"/36cm
		Other	
		Thread Type & Size	Cotton (Quite Fine)
		Thread Colour	Beige and patchy brown
		Eyelet Type & Length	Metallc – 8mm in diameter
		Labels	
		Back	
		Front	

## APP 7 – Cost Sheet

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**COLLEGE OF SOCIAL SCIENCE – FACULTY OF ART**

**DEPARTMENT OF INDUSTRIAL ART**

COST SHEET

Date: March 27, 2010

Name of Student: Kenneth Bright Boateng

Index Number: PGI711007

Design No.: KBB001

Pattern/Marker Number: KBB001

### ITEMS

COMPONENTS	SUPPLIERS	QUALITY	WIDTHS	PRICES (Ghc)	COSTING (Ghc)	NET COST
Fabric (1)	Local Market	Similar Colour and Texture	Raw Dried Corn Husk	1.50	35.50	37.00
Fabric (2)	Backyard Garden	Similar Colour and Texture	Raw Dried Plantain Husk	0.00	30.0	30.00
Notions	Local Market	Broad and firm	6 – 8mm in diameter	2.00	5.00	7.00
Thread	Local Market	Quite Fine Rayon thread	0.1mm in diameter	1.00	5.00	6.00
Customer Profile.				950.00	2,375.00	3,325.00
Designing				1,700.00	4,250.00	5,950.00
Pattern Const.				257.50	643.75	950.75
Apparel Const.				850.00	2,550.00	3,400.00
Monument Casting				1,100.00	2,750.00	3,850.00
Emolument				2,500.00	6,250.00	8,750.00
<b>Remarks:</b> In pricing the artefact, the opportunity cost of time, money, risk, and effort put in through the period of research, construction, and presentation were factored. Also considered was the target status of the target client for this was surely a custom made product					Total Cost (Prod.)	26,305.75
					Dressing Accessories	99.99
					Mark Up (%)	8,763.94
					Total Mark Up (Px)	43,819.70
					Margin (Px)	46,010.69
					VAT/NHIL 15%	6,901.61
					Selling (Px)	46,010.69

Source: Field Data, (2009)