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SCHOOL OF THE ARTS AND DESIGN

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(Fashion design specialization)

**INCORPORATION OF USER EXPERIENCE AND AFRICAN
VIBRANT COLORS AND PATTERNS TO CREATE ADAPTIVE
CLOTHING FOR THE PHYSICALLY CHALLENGED WOMEN**

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DECLARATION

**I declare that this project is my original work and to the best of my knowledge
has not been**

**Published or submitted for fulfillment of any degree, diploma or any other
award in any**

Learning institution.

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Dr. Lilac Osanjo

DEDICATION

This project is dedicated to God for giving me the strength and the grace to carry it through.

This project is also a dedication to my late mother who mentored, inspired me and introduced me to the world of fashion. I hope to make her proud.

Lastly this project is dedicated to the physically challenged persons who have inspired me to write this project and have taught me so much while interacting with them.

ACKNOWLEDGEMENT

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I also wish to thank the patients at the Association for the Physically Challenged of Kenya and fellow amputees who are not under the association who accepted to be part of this project and found time to render their help during the survey and interviews for the project paper.

Special thanks to Maria (Chande) who was the inspiration behind this whole project which has opened my eyes and made me see the world from a different perspective.

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Thank you.

ABSTRACT

The aim of this collection is to create adaptive clothing for physically challenged young women in Nairobi Kenya. The inspiration behind this collection is a lady by the name of Maria who is an arm amputee and her need to be able to easily wear comfortable and functional adaptive clothing but still be stylish and chic. Many designers around the world have been able to create adaptive clothing for physically challenged people.

Springboard alum and UX designer Jeremy Nigh put it this way:

“All too often I have designed on an island by making assumptions based on what I think an end user needs, crafting pixel-perfect mockups based on my assumptions. I’ve learned that the ‘U’ in UX does not stand for ‘you’! It’s all about the user, so getting outside of my head and engaging with the user is an important step in the design process.”

In this collection some of the problems that will be addressed include using Velcro fastens elastic, drawstrings snaps and zippers in adaptive clothing to make it easier for the user to wear their clothes using one hand and to be fully independent without having to need a caregiver. Their desire is to be able to keep up with the trends in fashion but still have garments that cater to their needs.

For the print and color scheme the inspiration is drawn from the African bird known as Lilac –breasted roller because of its bright and beautiful colors and the texture of its feathers. The aim is to bring light and joy to the garments by using colorful and bright prints. Fashion has a very important impact on how the wearer feels and relates with others. Clothes communicate a person’s mood, attitude and brings out confidence in the person.

Some of the design champions that will be highlighted on this paper include Bezgraniz couture, who have created a fashion market space for those with disabilities including partnering with Mercedes Benz to have a fashion show with disabled models. Another exemplar is Tommy Hilfiger who recently launched an Adaptive clothing line with Mindy Scheier as one of the contributors to this designs. Another design company is Nike who have also stepped up to cater for those with disabilities by design an all-

Inclusive footwear called Nike FlyEase. This was inspired by a physically challenged Olympian Ellen Donne.

In this paper descriptive quantitative research methods will be applied to establish in-depth information about the physically challenged, and their relationship to fashion. Interviews, questionnaires and archival research will be carried to gather information effectively. The data gathered by the researcher will enable the researcher to know more about the problems faced in relation to fashion and how best to tackle these problems and effective solutions that will work best for the user.

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CHAPTER ONE: INTRODUCTION

1. Introduction

This chapter is an introduction to the research on adaptive clothing for physically challenged. It provides a brief review of adaptive clothing and its impact on the physically challenged. It outlines the background of the study and highlights the aim of this research, the objectives, the guiding research questions and justification of developing functional, fashionable, adaptive clothing for physically challenged in Kenya.

1.1. Background of the problem

People with disabilities often face discrimination in lifestyle. They are excluded and rejected due to their physical or mental challenges. However, as time goes, societies are now recognizing the need to remove other barriers such as making the physical environment more accessible, providing information in a variety of formats and challenging attitudes and mistaken assumptions about people living with disabilities. Likewise in Fashion, designers, especially in the west, are beginning to realize the need to create products and garments that cater to the needs of those living with disabilities. The purpose of clothing is to express an individual's style, their mood, meet the user's protection, functionality and comfort needs. Each must be to achieve a garment's functionality. Another function is to hide or beautify physical disabilities if possible. However, clothing cannot always hide the physical disabilities of people who suffer from more severe disabilities. All clothes should be comfortable with whoever is wearing the garment. This is particularly important for those who are either confined to a wheelchair or are unable to use all their limbs. In addition to protection, functionality, and comfort, clothing has an aesthetic function, the purpose of which is to express the wearer's personal style and hide physical disabilities. In such cases, clothing must meet the needs of a disabled person, while achieving the pure aesthetics of garments, as the design has a significant effect on the human social dimension. Contrary to the popular beliefs/ myths associated with disabled women, they perceive fashion as a source of self-expression, yet the clothing options available to them are highly limited. From the

Time they were affected, they have been purchasing regular clothing and customizing the same to meet their special needs. Therefore, they feel they are not acknowledged by the fashion industry, which is perceived to be operating with a singular ideal of beauty (Ahmed, 2017). The lack of appropriate clothing has created a barrier that prevents them from engaging with the community freely (Kabel, McBee-Black, & Dimka, 2016) An analysis of the evolution of adaptive clothing was conducted through a review of relevant literature published from 1963-2017.

Initially ready to wear was manipulated to adapt to the needs of the people living with disabilities. Then as time went by, researchers began to study the various needs of the disabled to design clothing that will fit those specific needs aesthetically and functionally for a small population. Evidence of this inclusive movement includes the incapacity and Assistive Technology Summit held at the White House in 2016, during which speakers discussed the utilization of universal design to make products with people with disabilities for everyone (McFarland, 2016, para. 10). This process of code sign and universal design is rooted in the design thinking movement, a creative problem-solving process that utilizes empathy and human-centered design to find solutions (Brown, 2008). The spirit of inclusion and style thinking used during the assembly of inclusive technology is additionally reflective in apparel design. The Fashion and Physique Symposium hosted by FIT in 2018 is further evidence of the momentum to bring adaptive clothing design to the next level. Guest speakers highlighted and discussed the diversity gaps within the current retail industry and addressed possible solutions. Currently, various clothing brands and retailers provide adaptive clothing lines. Brands like BezGraniz couture, Kozie Clothes, NBZ apparel, Target, and Tommy Hilfiger all provide articles of clothing developed for people with specific disabilities. The availability of different adaptive clothing sources is more evidence of the growing acknowledgement for appropriate clothing for people with disabilities.

1.2. Statement of the Problem

Fashion and clothing for physically challenged are yet to be fully explored and realized. Wearing clothes that are not up to the trends, not being able to put on or remove clothes easily with one hand is quite a challenge.

Having to wear clothes that are not comfortable to the skin or not being able to find clothes that best suits their needs as arm amputees.

The fashion industry should look into ways in which they can tackle these problems and make adaptive clothing accessible and functional to those who need them.

1.3. Objectives of the study

1.3.1. Main objective

To foster oneness and inclusivity by creating aesthetically, functional, protective, fashionable adaptive clothing for the physically challenged by applying nature-inspired prints and creative garment construction techniques that can be worn by both those with physical disabilities and those without.

1.3.2. Specific Objectives

1. To gather detailed information about specific physical limitations, professional clothing needs, preferences and current acquisition options from a sample of employed women (Users) who are affected by a variety of physical disabilities
2. To establish functionality and accessibility barriers in clothing that affects the physically challenged
3. To design a fashion line of adaptive clothing using user experience principles from data gathered from interviews and questionnaires with physically challenged young women
4. To implement creative garment construction techniques that can be used to achieve clothes that are aesthetically conscious of the needs of the physically challenged.

1.4. Significance of the study

A study on fashion and clothing concerning physically challenged and specifically amputees will open up doors to further exploration of rethinking, redesigning and inclusion of amputee consumers. The study will explore ways of including amputees into the market and catering for his or her needs effectively and sufficiently. The belief of the objectives during this study will cause a far better understanding of the

requirements of amputees and concerning adaptive clothing and fashion. This research also will provide valuable insight and increase the prevailing literature on the topic of adaptive clothing for the amputees. This will help open the door for inclusivity in the apparel industry in Kenya and teach the approaching generation on the importance of making fashion that's universal and caters to the consumer's needs efficiently. The APDK is going to be a beneficiary of this study because it will help them to continue with their mission.

“The Mission of the Association is: To enable persons with disability to overcome their physical limitations and empower them economically and socially to become self-reliant and fully integrated members of their communities.”

1.5. Scope of the study

These are the areas that the researcher will work on during the study. The Association of the physically disabled of Kenya, Ruai, Nairobi.

1.6. Thematic scope

This study gives an idea to the creation of adaptive clothing for amputees inclusive to printed textile and woven accessories. The study is based on both primary and secondary sources to acquire information necessary to make right conclusion and realistic recommendations that would be applied in creating aesthetic clothing for amputees.

1.7. Geographical scope

This study was carried out at the Association for the Physically Challenged of Kenya in Nairobi. The organization has a population that fits for the researcher to carry out the study.

Figure 1: image of Association for the physically disabled of Kenya -Waiyaki way

Source:www.google.com/googlemaps



1.8. Limitations of the study

In this study, initially the researcher intended to do a case study research but due to the various types of physical challenges. A case study cannot be carried out as every individual has different experiences and different needs therefore a population will be needed to carry out the research and gather accurate and inclusive information effectively. This will help the researcher to not be bias to only one person's needs which may not apply to a fellow amputee. However, due to time limit this research will be carried out in a small population.

CHAPTER TWO: LITERATURE REVIEW

2. INTRODUCTION

2.1. Adaptive clothing

Adaptive clothing are garments designed specifically for people living with disabilities, endeavoring to extend quality of life and independence. An adaptive garment is a garment that has two or more joining portions which are releasable, attached together by at least one easily detachable fastener which is not visible to an observer when fastened. People with physically different body shapes than a brand's average may not fit into the brand's clothes because the brand did not design the clothing to fit their body, especially people living with physical disabilities. Additionally, people with intellectual differences may not be able to manipulate common closures used on typical commercial clothing (Carroll & Kincade, 2007).

Thus, people living with disabilities tend to be underrepresented in the fashion industry because:

(1) Brands typically do not use them as fit models because they do not represent the ideal customer and

(2) Brands do not use their measurements to create averages for sizing development. In an attempt to address the fit issue, brands have begun to develop size categories within their clothing brands (e.g., petite, curvy, long). Additionally, to address issues that people with intellectual difficulties may face, brands have started to produce adaptive clothing.

Currently, only two nationally-known companies, Target and Tommy Hilfiger, provide adaptive clothing lines (Moniuszko, 2018). However, only Target provides the clothing line in-stores and online, contrary to Tommy Hilfiger which is only available online (Target, n.d.; Tommy Hilfiger, n.d.). Another common characteristic of the adaptive clothing market is the limited styles provided. Excluding Target and Tommy, other online-based brands focus more on the functionality of the adaptive garment more so than the aesthetics of the adaptive garment, resulting in a homemade look (M.L. Hall, personal communication, April 10, 2019) or institutionalized feel (McBee-Black & Brookshire, 2018).

3. Because clothing is a nonverbal form of communication, it allows the wearer to create and express his/her identity in society (Roach-Higgins & Eicher, 1992). But, when people living with disabilities struggle to find appropriate clothing, their choices can be constrained by market availability. Thus, people living with disabilities will have restrictions on their personal expressiveness because of restrictions on their clothing style choices.

Furthermore, Kabel, McBee-Black, and Dimka (2016) discovered that when a person living with a disability does not have appropriate clothing for a certain social situation, that person will choose to not participate in the social situation. Thus, people living with disabilities not only face design barriers, like fit and style limitations, when dressing, but also face social barriers, like expressive and situational limitations, when dressing. (Kelsey.A.Kosinski, 2019)

2.2. Clothing problems

These arise from medical conditions and their knowledge helps to approach clothing designs for disabled. According to the Disability Discrimination Act (DDA, 1975) by UN defines a disabled person as someone who has a physical or mental impairment that has a substantial and long term adverse effect on his or her ability to carry out normal day to day activities. The World Health Organization (WHO,1980), made this distinction; Handicapped , a disadvantage for a given individual, resulting from an impairment or disability , limits or prevents the fulfillment of a role that is normal, depending on age, sex, social and cultural factors for that individual. Handicapped is therefore a function of the relationship between disabled persons and their environment. It occurs when they encounter cultural, physical or social barriers which prevent their access to various systems of society that are available to other citizens. Below is a table of some disabilities and their clothing problems.

Table 1: disabilities and their problems in clothing

Source: Carroll, K. & Gross, K. (2010).

Disability	Characteristics	Problems in Clothing
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Amputees	Lower limb amputations from the accident or illness	Disfigurement is always visible, and this can have varying psychological effects on the individual
Arthritis	Chronic inflammatory disease of the joints which limits movement	Have difficulty in getting dressed & undressed Fastenings on shoes and stockings cause difficulty Need to be kept warm Shape problems can arise
Spinal Injuries	The damage in the spinal cord	Unable to dress by themselves Need to be kept warm Non-absorbent, synthetic fibers must be avoided Seams must be carefully positioned to avoid pressure sores
Bifida	In wheelchairs or using support Wear pads or bags because of incontinence	Fastenings may cause a problem for some people Need to be kept warm Safety is a primary requirement for clothing Difficulties in shape and proportion Easy access needed for incontinence pads and appliances
Scoliosis Kyphosis	Scoliosis is sideway curvature of the spine Kyphosis is a hump back	Need to be kept warm Fit garment to a brace rather than to a person Detract the eye away from the appliance because the main clothing problem is to get garments to hang correctly Wear and tear problems

Dwarfing Disease	Abnormally reduced size from a disorder of the pituitary gland	Figure can be small but in proportion or have short arms and legs in relation to body size
	and a lack of growth hormone	Have difficulty in finding clothing to suit their age Need to have their garments made to measure
Cerebral	Paralysis from partial damage of brain which controls the muscles	Unable to dress by themselves Shape problems can arise from the rigid limbs of the spastic and the floppy posture of the athetoid
Strokes	Partial, one-sided, or complete paralysis from the interruption of the blood supply to the brain	Dressing is a slow and frustrating process Fastenings cause difficulty Fabric should be easy to care for to assist independence

Factors affecting Adaptive Clothing

There are several essentials that adaptive clothing has to have. Schematic representation of the factors affecting adaptive clothing is as follows

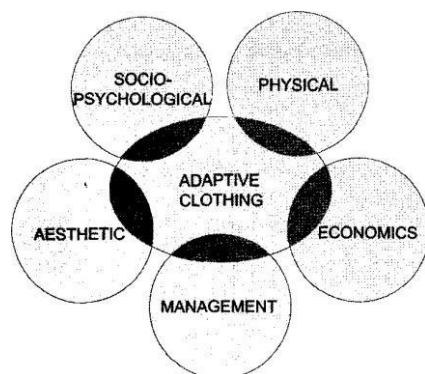


Figure 2: factors affecting adaptive clothing

1) Socio-psychological Aspect

In socio-psychological aspect, looking good, feeling good, and having the right clothes that promote the independence in dressing can increase self confidence and self-esteem in look. In other words, adaptive clothing can provide an immense sociopsychological boost among the individuals with special needs.

2) Aesthetic Aspect

People with special needs face the inconvenience of shopping for clothes. The majority of those consumers experienced major problems in finding fashionable clothes that fit their disabilities. In aesthetic aspect, all clothes should be attractive and fashionable showing off the wearer's good points and conceal the disablement. For a fashionable look, changes in the adaptive clothing should be invisible when the garment is worn (Kennedy, 1981).

3) Management Aspect

Disabled people need to consider the extra wear and tear on clothing because they get far more wear and tear and washing than do garments made for the able-bodied. Wheelchair arms, or the joints of appliances can cause heavy wear at particular points. It is wise to make sure that garments are made of strong enough material at particular points. A major difficulty can be that tough fabrics produce bulky seams which may damage sensitive skins or cause pressure sores. In this case, clever design of the garment with careful positioning of the seams is needed to reduce the problem (Thorton, 1990).

4) Economic Aspect

In economical aspect, products at affordable prices are in great concern of adaptive clothing since most of people with special needs have lower incomes and higher cost. Give consideration to the purchase price of a garment and the cost per wearing. And it is wise to select items which can be matched to several units to extend the wear life of a garment and reduce the cost of each wearing (Kennedy, 1981).

5) Physical Aspect

For the individuals with special needs comfort and easy access must be considered. Clothing must be convenient to put on and take off, with good long openings and the

minimum of fastenings. It makes the task of getting dressed easier and less painful and frustrating by utilizing unique features, such as Velcro closures or snaps.

Protection is needed for those who have little or no control of mouth muscles and tend to dribble, otherwise their upper clothing will be constantly wet, which often leads to chest infections. Delicate skin needs protection from rubbing or pressure caused by rough seams or bulky fastenings.

By considering physical aspects, adaptive clothing can promote independence of the people with special needs in dressing and also provide ease in the dressing process for the caregiver.

2.3. User Experience

Quality UX design allows the user to perform an operation seamlessly. If they are hindered, frustrated, or confused by the process required to perform the desired operation, then that's bad design—and it's really that simple. The difficult part is engineering your design to produce that seamless experience. The knowledge gap is derived from two pieces of information—current knowledge and target knowledge. As Spool describes it, “current knowledge” is the amount of knowledge a user already has when they approach the interface; “target knowledge” is the amount of knowledge they need, for them to be able to accomplish their objective. (Author: Rui Relá; Editor: Isaac Simon)

You can see here how this space comes into play; it is within the knowledge gap that design should be happening. Nothing needs to be designed below the current knowledge point because users can already get to that point by themselves, and there's no need to design anything above the target knowledge point because users won't need that information to perform the task.

This is an invaluable design tool for optimizing UX because if you can discover the knowledge gap for every individual aspect of your design, then you can be reasonably sure that users will have the ability to navigate through everything with ease. It's not always an exact science, but you can get pretty close with some research and trial and error.

Understand the underlying problem before attempting to solve it- Your work should have purpose—addressing actual, urgent problems that people are facing. Make sure

that you can clearly articulate the core of the issue before spending an ounce of time on developing the design. The true mark of an effective designer is the ability to answer "why?" Don't waste your time solving the wrong problems.

Don't hurt anyone- It is your job to protect people and create positive experiences. At the very minimum you must ensure that you do not cause any pain. The world is filled with plenty of anguish—make your life goal not to add to it. Make things simple and intuitive- Leave complexity to family dynamics, relationships, and puzzles. The things you create should be easy to use, easy to learn, easy to find, and easy to adapt. Intuition happens outside of conscious reasoning, so by utilizing it you are actually reducing the tax on people's minds. That will make them feel lighter and likely a lot happier.

Acknowledge that the user is not like you- What's obvious to you isn't necessarily obvious to someone else. Our thought processes and understanding of the world around us are deeply affected by our genetics, upbringing, religious and geographical culture, and past experiences. There is a very small likelihood that the people you are designing for have all the distinctive qualities that make you. Don't assume you innately understand the needs of your customers. How many people do you think truly understand what it feels like to be you?

Have empathy- Empathy is the ability to understand and share another person's perspective and feelings. Step outside your box and try really hard to understand the world from another person's point of view. Go out of your way to identify with their needs. If certain things just don't make sense to you, ask more questions. Ask as many questions as you need to until you finally understand. When you really get what makes people tick and why they do what they do, you'll have a much easier time going to bat to make their lives better. If you aren't trying to make people's lives better, what are you even doing here?

2.5. Lilac breasted roller bird

The lilac-breasted roller could have just as easily been called the “rainbow roller.” They have around 8 colors; green, white, black, yellow, turquoise, dark blue, reddish brown, and of course lilac. That is one colorful bird!

The lilac-breasted roller is particularly common in Kenya. While lilac-breasted rollers usually don't live near humans, people living in sparsely populated areas might be able

to tempt a bird into visiting by having a tall tree or pole that can serve as a perch. Lilac breasted rollers will use nesting boxes if they can't find anything else. The lilac breasted roller has appeared in the folklore of some African cultures. Some African tribes historically considered the lilac-breasted roller to be a symbol of peace, and their kings would sacrifice it to celebrate the end of a war.



Figure 3: Lilac breasted roller bird



Figure 4: lilac breasted roller bird.

Source: google

2.6. Mesob – Ethiopian basket

Basket weaving is one of human crafts oldest practice. In many African nations as in other places the world, there remain a wide variety of basket weaving traditions. From Tutsi basketry of Rwanda to Zulu baskets of South Africa, these methods combine centuries-old techniques and symbolism with the evolving aesthetics and social realities of modern people.

Anyone who's ever enjoyed Ethiopian cuisine at a restaurant specializing in the fare has probably encountered the Mesob. This relatively tall, wide- bottomed basket is a mainstay of such establishments bringing a touch of traditional culture to the dining experience. What makes it unique is that its primary function is not only to hold food



Figure 5 Mesob basket.

Source: google

For storage but act as a dining surface for people to eat from. Another outstanding characteristic is the amazing color palettes and mesmerizing patterns woven. It can also tell you things about the place, time that it comes from, the evolutions it has gone through. They belong to a larger tradition of Harari basket weaving which belongs to the walled city of Harar in Eastern Ethiopian. The city remained a vital center of commerce, linking trade routes between Ethiopia, the horn of Africa and Arabian Peninsula with viable ports promising trade with far more distant locations.

Basket weaving has been an important art form for the Harari primarily by the women of higher social classes. The materials used consists of a number of different types of grass or straw. 1. Migir- a sturdy plant, usually left undyed, is used as basis of the coils that make up basket. The coils are woven over a type grass known as 2. Agargara – these stems, which are often dyed, used as a kind of thread both to decorate the finished basket and to hold its structure together. Finally 3. Quarma is a basic type of straw which serves a decorative function and only used on the outside of basket. Both traditional and modern means of adding color to the grass is used.

Creating the basket is a painstaking and detailed process of coiling and weaving, using various materials to create a series of geometric patterns. The matter is further complicated because even the basic patterns of a basket have to be woven to include

patterns comprised of several colors. Scholars believe and qualify Harari basket weaving as high art. Like many other patterned works originating from African cultures, the patterns of Harari baskets possess specific names, many which reference to the history of the city, former rulers, conquerors or other notable historical moments. One such pattern called “Shield of Amir” refers to the Amirs who once ruled the independent city state.

2.7. Color as a semiotic system

Meaning embodied by color in African textiles differs by location. Red, for example, is reserved for chiefs and ceremonies in Nigeria, and represents wealth, vitality and aggression. It stands for good luck in Egypt, mourning in Cote d’ Ivoire and South Africa. Yellow represents mourning in Egypt and Ethiopia, and wealth in South Africa. Green is a symbol of corruption in North Africa, nature in South Africa and holiness and fertility in Egypt. Blue exudes positivity in Nigeria and happiness in South Africa. Purple denotes virtue in Egypt while pink denotes poverty in South Africa. White shows illness or purity in Ethiopia, good luck and peace in Nigeria, goodness in South Africa, cleanliness, goodness and good luck in Zambia and status in Egypt. Black denotes impurity and unpleasantness in Ethiopia, rebirth in Egypt and is ominous in Nigeria (The International Business Edge, 2011). Color thus exemplifies a semiotic system, signs and symbols and their relationship to various factors. Woven and printed textiles were dyed earthy colors such as khakis, mahoganies and terra cottas, since pigments and dyes were made from bark, insects, plants, seeds, and soil and ground vegetables. Charcoal was used for blackening and generating shadows. In this study, the researcher will be using the different colors found on the lilac breasted roller bird which



Figure 7: color scheme inspired by lilac breasted roller bird

Figure 6: Mesob basket found in Ethiopia.

google

Symbolizes diversity and different values and characteristics that we have as humans. The colors are bright and very beautiful. These colors will be used in the print textiles and fabrics and woven accessories.

2.8. Design exemplars

2.8.1. Bezgraniz Couture

Bezgraniz Couture provides fashion that improves quality of life for people with different types of disabilities, and for their family and friends. They work in the following areas:

- Designing and constructing adaptive clothes and establishing pilot productions
- "Rebranding of Disability" — development of new communications about disabilities
- Research and development

Participants in their projects include Paralympians, models, celebrities, and public leaders with and without disabilities, and people who inspire others by their example and will power.

Bez Graniz (Russian for “without borders”) started as a private initiative in 2008. It’s become a leader in skills improvement and the employment of the disabled professionals. They have paid attention to adaptive clothes and in 2011-2012, they conducted the first ever international contest for designers of clothes and accessories for people with disability. When creating a collection, a set of tasks is taken into account:

Aesthetic — when a person doesn't want his/her disability to be visible; **Specific function** — which allows to solve a particular problem connected with wearing or putting on clothes when a person has certain body peculiarities keeping his/her self-esteem, sometimes even getting it back — the right clothes give not only physical but also psychological comfort allowing the person to feel more freedom and independence..



Figure 8: BezGraniz couture fashion show.

Source: google

Since 2010, Bezgraniz Couture has been organizing annual scientific-practical conferences and round tables about the creation of clothes for people with disabilities. Their participants are international professionals from inviting the leading universities in Ivanovo, Novosibirsk, St.-Petersburg, Moscow, Tomsk as well as international educational force from Portugal and Germany.

In 2014, they offered the British Higher School of Art & Design in Moscow an educational course on designing clothes for people with disabilities as part of their fashion design curriculum. Today, collections created by the students are presented on the runways of Mercedes-Benz Fashion Week and Los-Angeles Fashion Week and have been launched into production.

In 2015, they commissioned a new research “People with disabilities are consumers of fashion products and services.” Until this research, there was no comprehensive research of the disabled market as fashion consumers. According to the estimated data collected in this report, people with disabilities around the world are active consumers in the fashion market. The report was conducted by the school of the Arts and Design at the Nottingham Trett University in the UK and supported by the Burda Style. It revealed that this untapped market is equal to the size of China.

Disability today is a lifestyle that challenges people who live it every day to master their own environment and the world that surrounds them. Comfortable clothes help us to be more confident and to achieve success. Moreover, a stylish well-dressed person with a disability changes perceptions more successfully than many social campaigns. Clothes are a gateway to inclusion that allows people with disabilities to more naturally integrate into society.

UNO Convention on the Rights of Persons with Disabilities states that the necessary inclusion of people with physical or mental disability will be achieved when states, industries and communities will change their attitude towards this socially marginalized group and will offer them the necessary goods and services which will include them into public and market processes. This includes the world of fashion. Though more than 200 artisan and small businesses worldwide produce clothes for people with disabilities, only a few produce goods that provide the physical and emotional comfort that truly meets the needs of this unique market. Bezgraniz Couture is here to fill that void.

"Clothes for women who use a wheelchair have their own features: for example, the skirt should have a high waistline from the back and be of more close texture, and be tailored so that it doesn't get into the wheels. Length should be up to mid-leg or to the floor so it would create a visually proportionate silhouette. The upper part of the dress should be shortcut in the front and the sleeves tailored to leave good dexterity to control a wheelchair. Elements of rigidity would be useful to support the back. Clothing made of soft fabrics would allow to masque figure's specifics in the waist area. Transforming clothes would be very convenient, the ones that can be expanded in a wheelchair and fasten on in a sitting position. In dirty weather, accessory such as sleeves that protect clothing would be also advantageous". Daria Razumikhina, the creator of the collection named "Rainbow", answered our questions about her work for the show BezGraniz Couture | Couture with No Bounds. The show took place on March 31, 2014 at Mercedes-Benz Fashion Week and was organized by BezGraniz Couture International Fashion and Accessorize Award, an international fashion competition for people with disabilities, in partnership with Mercedes-Benz Russia.

2.8.2. Tommy Hilfiger

Buying clothes that perfectly adapt to the day-to-day requirements of people with different needs can be tough. Thankfully, the fashion gods smiled upon an all-American design mogul who has certainly outdone themselves with Tommy Adaptive. The newest clothing line by Tommy Hilfiger is geared towards giving people with unique needs a fresh and stylish wardrobe without compromising on function. Work for this collection started in 2016, when Tommy Hilfiger collaborated with Runway of Dreams, a non-profit organization founded by Mindy Scheier—whose child has a condition called muscular dystrophy. Together, they created a clothing line that was more inclusive for children with special needs. Then starting last year, adaptive clothing for adults were released. The new collection was designed with the goal of providing people of all abilities more empowering clothing option.

The clothing line is characterized by how easy it is to put the pieces on. It includes essentials such as shirts, pants, shorts, dresses, and jackets that are modified for ease of use. Some of the notable features in the collection include: Adjustable hems, one-handed zippers, side-seam openings, bungee cord closure systems, adjustable waists, magnetic buttons, Velcro, easy-open necklines and expanded back openings for shirts.



Figure 9: Tommy Hilfiger adaptive clothing 2.

Figure 10: Tommy Hilfiger adaptive clothing

Source: google

In an interview with Elle magazine, Tommy Hilfiger said that he understood and listened to the needs of these individuals. He focused on customer feedback, and made sure that significant improvements were made to suit them best. While the collection still has that unmistakable Tommy Hilfiger signature aesthetic, the Adaptive line is

definitely more inclusive and customer-centric. Shoppers of all abilities are now able to fit pieces that are both functional and stylish, allowing them to express their personal, unique style.

This new collection signals a significant shift in the fashion industry, which was once focused on aesthetic and sheer beauty. Now it is slowly evolving to address the specific needs of a formerly underserved group of individuals. Finally, fashion has moved beyond form and function, morphing into an increasingly inclusive industry. **2.8.3.**

Nike FlyEase



Zappos

Nike (NKE) is stepping up its game to meet the needs of people with disabilities. The swoosh brand is expanding and improving its easy-entry footwear system called FlyEase. Nike FlyEase is made for athletes of all abilities and ages. It features a unique slipper-and-strap design for quick and easy on and off. Shop Nike FlyEase. Features: Performance and function-Easy on/off-Men's women's, kids

In 2015, Nike unveiled FlyEase, a collection of shoes that employ zippers, Velcro and other fasteners in place of laces. The latest FlyEase shoe was shown off this month, a football cleat for Seattle Seahawks linebacker Shaquem Griffin, whose left hand was amputated when he was a child.

One of FlyEase's main goals, according to Nike, is to create more hands-free solutions, so the shoes are easier to take off and put on. Some of the features include straps that can be adjusted with one hand, drop-down heels, laceless closing, and the ability to modify the shape of the shoe for different foot shapes and sizes.

Nike has expanded the FlyEase lineup of shoes to more than 10 models. The 6 most recent are: the Air Jordan 1 FlyEase (\$140); Air Zoom UNVRS FlyEase (\$160); Women's Air Zoom Pegasus 36 FlyEase (\$120); Men's Air Zoom Pegasus 36 FlyEase (\$120); LeBron Soldier 13 FlyEase – Big Kids (\$110); and LeBron Soldier 13 FlyEase (adult) (\$140).



Figure 11: Nike Air Zoom UNVRS sneakers

Source: Elena Delle Donne #11 of the Washington Mystics wears Nike Air Zoom UNVRS sneakers during warmups before Game Three of the 2019 WNBA Playoff semifinals against the Las Vegas Aces at the Mandalay Bay Events Center on September 22, 2019 in Las Vegas, Nevada. (Photo by Ethan Miller/Getty Images)

The Air Zoom UNVRS FlyEase was inspired by Olympic gold medalist, forward for the Washington Mystics and 2015 WNBA MVP Elena Delle Donne and her sister Lizzie, who has cerebral palsy. The side strap on the shoe features the message, “If you have a body, you are an athlete.”

“FlyEase takes inspiration and insights from athletes of all abilities to drive innovation for all and helps eliminate barriers to play. We’re excited to make an impact with solutions where everyone can benefit,” said Sandra Carreon-John, senior director at Nike.

Adaptive clothing, or clothing that is designed to meet the needs of people with health conditions and limitations, is a segment of the fashion industry that has largely been ignored by major brands. But according to Coresight Research, the adaptive fashion market is expected to climb to \$349.9 billion by 2023. The Centers for Disease Control

and Prevention reports that 1 in 4 U.S. adults — or 61 million Americans — has a physical or cognitive disability that impacts major life activities.

That followed the January debut of the \$350 self-lacing basketball shoes. The self-lacing models, which are connected to the Nike app and require recharging, are more of an expression of Nike's tech prowess than a practical solution for those who might need it.

Conclusion

In this literature review, insight is provided on how the physically challenged interact and use design products and how it makes their lives a little bit easier than it was. Inspirations drawn from African communities and cultures also help bring life to the design products. This information gives a clearer viewpoint for the researcher who will use it to create effective adaptive clothing for the physically challenged. Designers and more so fashion designers have a challenge to do all they can to tap into this still fresh market of those with disabilities and meet their needs in clothing.

CHAPTER THREE: RESEARCH METHODOLOGY

Overview

This chapter's aim is to describe the research design method, population and sample, data collection methods and relevant data analysis and presentation tools to be applied.

3.1. Research Design

The aim of this paper is to review fashion design and the way it relates persons living with physical challenges through adaptive clothing.

In this study, descriptive qualitative research are going to be applied and its main objective are going to be to explain the prevailing state of affairs at the present time. It'll be used with the aim of achieving in-depth understanding of the study. Quantitative research approach also will be applied slightly to yield more objective and accurate information.

3.2. Population

The book *Research Methods: Quantitative and Qualitative Approaches* defines population as a whole group of people, events or objects having common observable characteristic (Mugenda & Mugenda, 2003). The target population of the study are going to be narrowed right down to the physically challenged at the Association for the Physically Disabled of Kenya rehabilitation clinic thanks to the scattered population within the country.

3.3. Sources of knowledge

Two sorts of data are going to be went to collect this information: primary and secondary data. The first data are going to be derived from the answers respondents give during interviews with the researcher. The secondary data are going to be derived from the finding stated in published documents and literatures associated with the research problem. This study will employ qualitative approach of knowledge analysis. This may be done through interviews, surveys, audio visuals, observation.

3.4. Sample and sampling method

Following the character of the target population, the simplest sampling method to use would be purposive sampling. This method are going to be employed because the main target is on in-depth information and not making inferences or generalizations. This

sampling technique will allow the researcher to use cases that have the specified information with the objectives of her study. Cases of the themes are going to be handpicked because they possess the specified characteristics and are informative. (Mugenda & Mugenda, 2003) The study participants are going to be of various age and with varying physical disabilities. This may enable the researcher to realize much needed scope into the requirements of physically challenged in reference to fashion. Fashion designers are going to be a part of the sample to supply insight into garment construction techniques and tactile textile print methods that might make fashion more accessible to physically challenged.

3.5. Data collection instruments

Qualitative research approach informs the info collection tools that the researcher will prefer to employ accordingly.

3.5.1. Interviews

The section on individual interviews covers structured, semi-structured and unstructured interviews; the uses of every type; their advantages and disadvantages; and therefore the roles of the interviewer. An example of questions and prompts, utilized in a semi-structured interview, completes the discussion. Interviews involve interaction with others, the researcher engages the respondent in conversation by administering a questionnaire orally or an interview schedule. During the verbal interchange the interviewer records the answers. Interviews provide in-depth information making it possible to get data required to satisfy specific objectives of the study (Patton, 1990). Through interviews the researcher is in a position to clarify and elaborate on the study objectives which yields higher response rates. A semi-structured interview schedule are going to be administered to the sample population.

3.5.2. Questionnaires

The discussion focusses on their uses, advantages, disadvantages, also as their design. The administered questionnaires will contains closed-ended and open-ended questions. These questions will offer answers amenable to statistical analysis and supply a more complete picture of the respondent's feelings and attitudes. (Kothari, 2004)The answers provided through questionnaires are well-thought out and non-biased.

3.5.3. Observation

Observation involves watching and taking note of an interaction or phenomenon because it takes place. It's purposeful, systematic and selective. Observation will allow the themes behavior to offer insight to collected subjects??? Perceptions. The researcher are going to be ready to study arm amputee in their day to day activities and their interaction with clothing. The researcher will combat changing observational roles taking over both participant and non-participant roles; seeking to ascertain experiences from the views of the participants and also recording the phenomenon under study. (Creswell, 2012)

3.5.4. Archival materials

One advantage of using the archival research method is that the info have already been collected; therefore, the researcher won't got to undergo the institutional review process to realize participants' permission to gather data. Additionally, the info are often relatively easy and cheap to review. Archival research minimizes the response biases of subjects because the researcher isn't present while the info is recorded. Archival data is extremely plentiful and has already been collected. This makes it easier and sometimes less expensive than alternative research methods. Archival research is effective in helping to verify that the results and theories derived from experiments reflect the real world and don't just exist in artificial or simplistic laboratory settings.

This approach can help researchers create new ideas for hypotheses and experiments.

Table 2: data collection instruments

Source: Adera Rosemary, 2020

No.	Description	advantages
1	Interviews	<ul style="list-style-type: none"> • Higher response rate • In-depth interaction with respondent • In-depth information as it is respondent who is answering themselves
2	Questionnaires	<ul style="list-style-type: none"> □ They are relatively easy to analyze. □ They are familiar to library staff and managers.

		<ul style="list-style-type: none"> □ A large sample of the given population can be contacted at relatively low cost; □ They are simple to administer; □ The format is familiar to most respondents;
3	Observation	<ul style="list-style-type: none"> □ Very direct method for collecting data or information □ Best for the study of human behavior. □ Data collected is very accurate in nature and also very reliable.
4	Archival Materials	<ul style="list-style-type: none"> □ Archival research minimizes the response biases of subjects □ Archival data is very plentiful and has already been collected... □ Archival research is effective in helping to confirm that the results and theories derived from experiments reflect the “real world” and do not just exist in artificial or simplistic laboratory settings. □ This approach can help researchers create new ideas for hypotheses and experiments.

3.6. Data collection methods and procedures.

The researcher will use tools like observation guides. These include taking photographs, writing relevant notes and sketching diagrams that might be useful in collected data. The researcher also will use interview guides. This includes procedures like interviewing various respondents within the sample target.

3.7. Data Analysis Tools

Following the qualitative research approach, the study will realize qualitative data. The researcher will obtain detailed information then attempt to establish trends, patterns and relationships about the gathered information. This may help to work out the adequacy of

data, its credibility, consistency, usefulness and validation or non-validation of the hypothesis (Mugenda & Mugenda, 2003) the evaluated information will help in answering the research questions. Qualitative research approach may however yield quantitative data supported the objectives of the study and data collection procedures. Close ended questions within the questionnaires will yield quantitative data. within the case of qualitative research, the info are going to be cleaned and sorted for content analysis to get data that's verbal and descriptive (Rukwaro, 2016). Descriptive statistics are going to be utilized in data analysis, enabling the researcher to explain a distribution of measurements within the measures of central tendency; mode, mean and median.

3.8. Presentation Methods

After analyzing the qualitative and quantitative data the researcher will present findings. The trends and patterns will be presented using pie charts, graphs and tables showing numbers and percentages for comparison. Also implement use of texts and images.

Table 3: Data collection instruments, analysis and presentation

Source: Wanjiku Muriqi, 2018

	Description	Data Analysis	Presentation
1.	Interviews	Content analysis: Grouping, categorizing and comparison Audio Transcription	Text narrative: describing notes
2.	Questionnaires	Descriptive Statistics Grouping, categorizing and Comparison	Graphs, Pie charts of Percentages Tables of Mean, Mode, Median
3.	Observation	Transcription and Grouping, categorizing comparison	Describing notes and checklists.
4.	Archival research	Transcription	Text narrative

Summary

This chapter will apply Qualitative research and some Quantitative research. Data will be collected using interviews, questionnaires, observation and archival research. The data analysis will apply a qualitative approach of establishing trends, relationships and patterns. The main methods of data presentation will be described notes, text narrative and also tables.

CHAPTER FOUR: FINDINGS AND INTERPRETATION OF FINDINGS

This chapter explains the analysis of data and findings based on the research that was carried out by the researcher. The findings interpreted in this chapter are based on questionnaires, interviews, observation and archival research.

4.1 Presentation of findings

The population that was targeted in this study were the physically challenged persons in Kenya. The population targeted for the study was broken down to the physically challenged at the Association for the physically challenged of Kenya. The institute was a favorable location as it offered easy accessibility to the scattered numbers of the population segment in the country.



Figure 12: satellite view of APDK -Waiyaki way. Source: google maps

4.2. Background of Association for the Physically Disabled of Kenya the Association for the Physically Disabled of Kenya (APDK) was established in 1958 as a non-governmental organization (NGO). The overall objective of the organization is to improve the Quality of life of Persons with Disabilities through promoting Rehabilitation and Inclusion. Since its inception, APDK has assisted and rehabilitated over 600,000 persons with disabilities through a network of 10 branches and comprehensive programmers starting from medical rehabilitation, therapeutic services, community based rehabilitation, educational programmers, vocational education , employment, self-employment through micro financing and provision of appliances and mobility aids. With currently over 350 employees, trainees and Government attached personnel, APDK provides life changing support to persons with disability

from the poorest families with attention on children in rural and slum areas. (Apdk, 2019)

Target population

The researcher distributed 15 semi structured questionnaires. 6 were issued to leg amputees, 5 to arm amputees and 3 to care givers. The distributed questionnaires were answered fairly. Response was 90%. The questionnaires had 2 sections. Section 1 included information on the type of amputation the participants are experiencing. Section 2 included how they purchase clothes, how they choose and the characteristics they look out for in clothes. The questionnaire also had a provision for the participants to give ideas on some of the features they'd like the garments to have. The participants in the study ranged from 23yrs-37yrs old. Observation was also made on some of the participants who are not patients at the APDK. Most of the respondents have an interest in fashion.

Physically challenged (amputees)

This classification was found out by International Sports Organization for the Disabled (ISOD), and is currently managed by IWAS who ISOD merged with in 2005. Several sports have sport specific governing bodies managing classification for amputee sportspeople. Classification for amputee athletes began within the 1950s and 1960s. By the first 1970s, it had been formalized with 27 different classes. This was reduced to 12 in 1976, and then down to 9 in 1992 ahead of the Barcelona Paralympics. By the 1990s, variety of sports had developed their own classification systems that in some cases weren't compatible with the ISOD system. This included swimming, Ping-Pong and equestrian as they tried to integrate multiple sorts of disabilities in their sports. Amputee sportspeople have specific challenges that different from other sorts of disability sportspeople. The classes for ISOD's amputee sports arrangement are A1, A2, A3, A4, A5, A6, A7, A8 and A9. The first four are for people with lower limb amputations. A5 through A8 are for people with upper limb amputations. A9 is for people with combinations of upper and lower limb amputations. Unilateral above the elbow upper limb amputations The purchasing practices carried out by the participants in this study is differentiated by the length of the garment, the material of the garment, the fastening methods used in the garments. They do not require a lot of assistance while buying clothes. Most of the participants who use prosthesis emphasized that the materials of the garment and the texture is an important characteristic in clothes they buy. While

buying, the challenge that was mostly highlighted was that once they purchase a garment, because of their amputation, they have to take the garments to be adjustable which then incurred more costs.

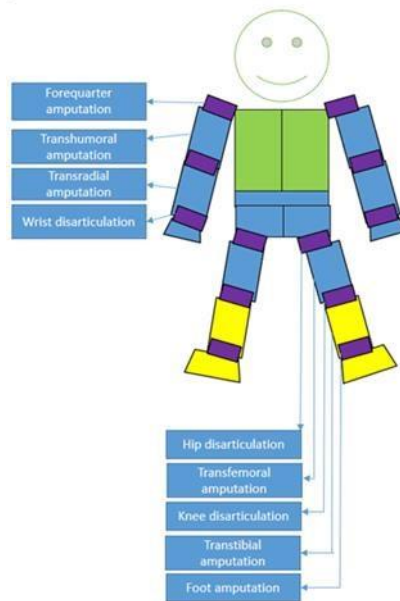


Figure 13: image of classification of types of amputations.
Source: Wikipedia-google

Table 4: classification of different types of amputees.

Source: Adera Rosemary, 2020

Classification	Descriptions
A1	Bilateral above the knee lower limb amputations
A2	Unilateral above the knee lower limb amputations
A3	Bilateral below the knee lower limb amputations
A4	Unilateral below the knee lower limb amputations
A5	Bilateral above the elbow upper limb amputations
A6	Unilateral above the elbow upper limb amputations
A7	Bilateral below the elbow upper limb amputations
A8	Unilateral below the elbow upper limb amputations
A9	Combinations of amputations of the upper and lower limbs

1.3.1. Onset of amputation

The researcher also inquired on the circumstances to which the participants became amputees. Whether they were born without a limb or part of it or whether they were involved in an accident or an illness that led to the amputation. This information would help in knowing how long the participants have interacted with clothing and the experience they've had with it.

4.3.1. Clothing purchasing practices

The purchasing practices carried out by the participants in this study is differentiated by the length of the garment, the material of the garment, the fastening methods used in the garments. They do not require a lot of assistance while buying clothes.

Most of the participants who use prosthesis emphasized that the materials of the garment and the texture is an important characteristic in clothes they buy. While buying, the challenge that was mostly highlighted was that once they purchase a garment, because of their amputation, they have to take the garments to be adjustable which then incurred more costs.

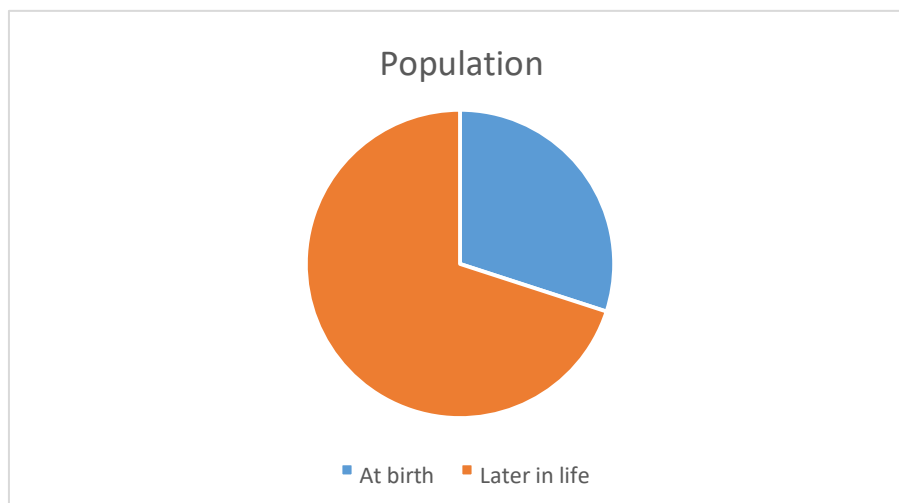


Figure 14: pie chart representing circumstance of disability.

Source: Adera Rosemary, 2020

4.3.2. Clothes dressing practices

The participants wear some of their garments with difficulties depending on their amputations. For example, the main issue upper limb amputees have with garments are zips and buttons. It's hard for them to wear garments as to zip a garment one needs two hands to be able to wear the clothes. For lower limb amputees, pants are a major issue as the amputated limb where the prosthesis is attached becomes a challenge while

wearing. They emphasized that the pants need to be wider so as to create room for the prosthesis.

A major and common challenge that they emphasized on both ends is that the materials used on the clothes are very light and end up getting torn by the prosthetics due to friction and while they're wearing it.

The challenges that the participants encounter while dressing clothes some of the following:

- Not being able to zip up their clothes without assistance.
- Inability to button clothes without assistance.
- Having to fold up pants while wearing prosthetics.
- Prosthetic tearing clothing while they're wearing.
- Having hanging garments on the amputated arm which leads to drawing of unwanted attention.
- Inability to wear attractive clothing with features that fit their needs.

Conclusion

There's a ready market in the fashion and textile industry in Kenya for adaptive clothing for physically challenged persons. Amputees experience so many challenges in relation to fashion and there's a need for inclusivity. Inability to zip clothes without garments, light material used in garments, adjustable garments are some of the challenges that were identified by the researcher during the study.

CHAPTER FIVE: SUMMARY FINDINGS CONCLUSIONS AND RECCOMENDATIONS

5. Introduction

This chapter presents a summary of the findings realized from the information collection methods applied by the researcher. The researcher outlines appropriate recommendations and conclusions supported insight gained from the literature review and research findings.

5.1. Summary of findings

The physically challenged specifically amputees experience challenges while purchasing and dressing that hinder their independence. This, therefore, forces them to hunt assistance family and friends or those around them. This might sometimes make them desire a burden to others and lower their self-esteem and confidence. Clothes can bring out confidence and make a mood for a private. Clothes communicate tons a few person. Through this study, it shows that amputees have an interest in clothing that they desire to shop for or wear. The research also pinpointed key features of clothing that matter in clothing selection.

5.2. Recommendations

This study highlights areas in fashion and textiles industry that would work to enhance the relationships between amputees and clothing. The discussions outlines possible areas of implementation that might transform the experiences of the amputees and help them on the trail of self-reliance and independence in reference to clothing practices of shopping and dressing.

5.2.1. Magnetic zips

The product wasn't originally conceived for convenience. As engineer Scott Peters watched his uncle develop myotonic dystrophy, a condition notorious for attacking the strength and coordination of one's appendages, he saw first-hand how manipulating buttons can impossible task, and even aligning the box and pin of a zipper can become daunting. While creating an easier zipper for his sick uncle, one designer fixed the problem all of us have when zipping up.

The magnetic zipper would be used as fastening mostly for jackets and some dresses. This will ease wearing clothes with one arm without assistance.

5.2.2. Velcro

Based on this study another major challenge for arm amputees is buttoning clothes without assistance. This method can be used to fasten dresses and pants to make dressing easier. It can also be used to create bras that can be worn by one arm without difficulty. This can also be used for pants of lower limb amputees to ease wearing prosthetics, so that they do not have to roll up their pants to put it on. The advantage of using Velcro is that it is not visible on the surface hence the fastening method becomes effective without attracting attention. On the surface decorative buttons can be sewn on the garments.

5.2.3. Elastic

A challenge in zipping and buttoning pants and skirts was also emphasized on by the participants. This fastening can be applied on the waist bands of skirts and pants so as to curb the challenge of zipping pants and skirts with one arm and having to seek assistance. It also helps build self-esteem.

5.2.4. Garment Construction

5.2.4.1. Use of rigid fabrics

Due to the problem caused by the prosthetics tearing and ripping clothes, the participants of this study desired that the garments be made of stronger fabric. Fabric that can withstand the friction while wearing the prosthetics. Materials like canvas, khaki.

5.2.4.2. Easy to wear design.

For upper limb amputees, shift dresses and blouses that can be worn over the head or garments with easy fastenings at the front are desirable features as it does not require assistance to put on or remove. They're also very comfortable.

5.2.4.3. Accessories

Some accessories desired include cross body soft bags with no zippers but instead have magnetic press stud for easy opening and closing without assistance. Shoes without laces is also another key accessory desired, slip on shoes that the only fastening needed is strap on Velcro at the heel of the shoe or zippers on the side of the shoe. The

researcher's suggestion for upper limb amputee is a wrap bra. A bra that can be worn by fastening Velcro at the under bust.

5.2.4.4. Use of color

Color brings about attitude and moods. Different colors communicate different messages to people one interacts with. The researcher's recommendation is the use of bright colors inspired by the lilac breasted roller bird and Mesob baskets from Ethiopia. By creating a print textile that reflects joy, happiness, hope and good, the researcher's aim is bring joy to the amputees through clothing.

5.3. Execution

This section details the approach the researcher undertook to realize the suggested recommendations within the creation of an adaptive and effective clothing line for the amputees. The planning process was applied consistent with the varied area of fashion and textiles design.

5.3.1. Printed textile

Below are some of the ideas for print that the researcher has created to be used as print for the adaptive clothing line to be made. Organic and outdoor forms were the inspiration behind this print. To bring the outdoors in through garments. The outdoor forms used in this print are from the lilac breasted roller bird and color scheme from the Mesob baskets.



Figure 15: sketch of print textile by Adera rosemary



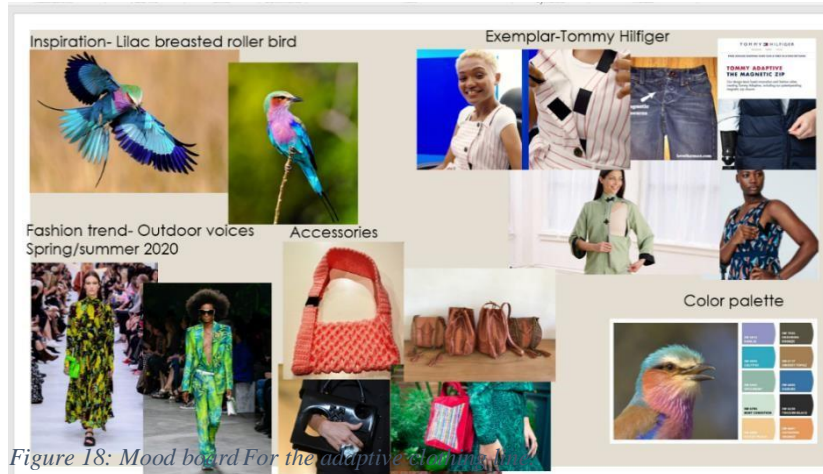
Figure 16: image of Mesob basket form Ethiopia. Source: Google



Figure 17: sketch of printed textile 2 by Adera Rosemary

5.3.2. Fashion Design

The study undertaken highlighted the needs of the visually impaired in regards to fashion. These needs were safety, texture and ease of identification and dressing. The researcher also analyzed fashion trends under the spring/summer 2020 season. The



Source: Adera Rosemary, 2020

Fashion trend that the researcher chose was outdoor voices which is inspired by nature and flowy feel.

5.2.3. Fabric Crafts

In this research, emphasis will be mostly on the fastening methods applied examples applied by Bezgraniz couture and Tommy Hilfiger. The researcher will be manipulating the fasteners to make them not just simply fasteners but bring them to life by using them

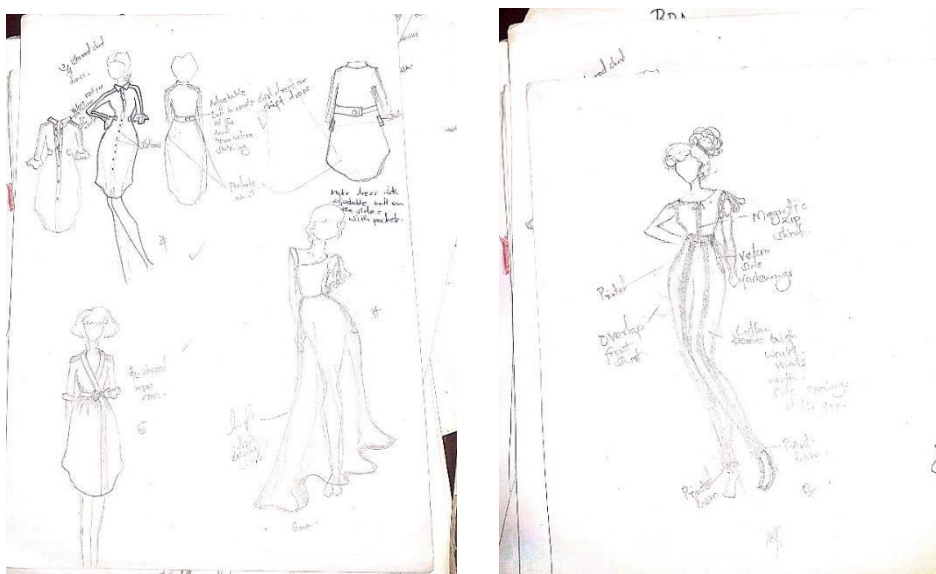


Figure 19: design sketches

Source: Adera Rosemary

To redesign a garment. The experimentation and sampling of manipulating the fasteners will be recorded in a design Production Dossier.

5.2.4. Spinning and Weaving

Weaving techniques will be applied to the making of this collection. Totally on the accessories example the luggage. Experimentation and sampling are going to be done on beading. The accessories during this collection will meet the users' expressed need for safety regarding their crucial personal belongings. This process also will be recorded within the researcher's Production Dossier.

Conclusion

The findings and observation made through this study has determined that there is a need for fashion designers to create adaptive clothing for physically challenged persons. Whether mobility impairment, visual impairment, hearing impairment or mental disorders, there is a need to cater for this market and design based on their needs. The solutions provided and proposals under progress are in line with overcoming challenges that amputees encounter with clothing practices.

Suggestion for further study

This study did not fully cover the extent of this subject and was not fully exhaustive. This research covered and an area in fashion that has not been ventured into by many researchers. This research has therefore opened up opportunities for further research.

Further study needs to be done in a larger population of amputees in the country and selecting respondents from different age groups. This will expand the findings on the experiences and challenges of clothing that the amputees face and hence provide greater levels of relevant feedback.

The researcher recommends the following for further research:

- Co-design approach. This approach to designing adaptive clothing would enable amputees to be a part of the creation process and have a voice on what's being created for them. The amputees could make an ingenious, effective, conscious contribution in creating solutions to the challenges they face regarding clothing practices.

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APPENDICES

Appendix A: Research Questionnaire

The researcher is a final year student at the University of Nairobi in the School of the Arts and Design, currently conducting a research study on the **Application of User Experience philosophy in creating a conscious adaptive clothing line** for the physically challenged young women.

This research is strictly for scholarly purposes.

Kindly answer and tick where applicable.

SECTION 1

1. What is your gender? Male Female 2. How old are you?
3. What is your physical disability Upper limbs disability, if so
- both arms
 - Single arm
- Lower limbs disability, if so
- both legs
 - One leg
4. What were the circumstance(s) of your physical disability
- At birth
 - Later in life

SECTION 2

5. Are you interested in fashion and clothing?
6. How do you identify different type of clothing?
7. What criteria do you use to buy clothes?
8. What difficulties do you encounter when choosing/and buying clothes?
9. What suggestions and opinions do you have in solving these problems?

10. In regard to the new product, what functions (material, hand feel (texture), details, price) do you think will be suitable to your needs?

B: Observation Guide

Observation grid

Participants Activity/ Routine Analysis:

Participant 1					
Dressing	Independent	Minimal Assistance	Partial Participation	Extensive Assistance	Unable to Complete
Selects appropriate clothing					
Puts on clothing					

Participant 2					
Dressing	Independent	Minimal Assistance	Partial Participation	Extensive Assistance	Unable to Complete
Selects appropriate clothing					
Puts on clothing					

Participant 3					
Dressing	Independent	Minimal Assistance	Partial Participation	Extensive Assistance	
Selects appropriate clothing					
Puts on clothing					

Source: (Wanjiku Murigi, 2018)

University introductory Letter



UNIVERSITY OF NAIROBI
COLLEGE OF ARCHITECTURE & ENGINEERING
School of The Arts And Design
P.O.Box 30197, GPO 00100 Nairobi, Kenya
Tel.2724527, Email:designdept@uonbi.ac.ke

REF: UON/CAE/StAD

9th January, 2020

Association for the Physically Disabled of Kenya
Waiyaki Way, ABC Place
P.O.Box 46747- 00100,
Nairobi, Kenya

Dear Sir/Madam,

RE: ADERA ROSEMARY ATIENO – B05/42893/2017

The above named is a fourth year student in the School of the Arts & Design, University of Nairobi. As part of the course work project, the students are expected to conduct research which involves interviewing staff and taking photographs towards the attainment of the objectives of the project.

The purpose of this letter is to request you to kindly accord her the opportunity to undertake this exercise and to assure you that this work will be used purely for scholarly purposes.

Thank you for your co-operation.

Yours sincerely

DIRECTOR
SCHOOL OF THE ARTS & DESIGN
COLLEGE OF ARCHITECTURE & ENGINEERING
UNIVERSITY OF NAIROBI

Dr. Lilac Osanjo
Director,
School of the Art and Design

