FACULTY OF ENGINEERING

DEPARTMENT OF TEXTILE AND GINNING INEERING

FINAL YEAR PROJECT

INVESTIGATING THE EFFECT OF GSM AND FABRIC THICKNESS ON THE DRAPE OF DENIM FABRICS.

BY

KYEBAKOLA KENETH

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SUPERVISORS:

Dr. NIBIKORA ILDEPHONSE

: MR. GODIAS TUMUSIIME

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ABSTRACT

Drape is an important property, which affects the aesthetic appearance of fabrics used in garments. In this study, an investigation was under taken to find out whether there is an effect of varying GSM values (302,366,374,381,386,430,376,435,427,321,482 and 380) and fabric thickness on the drapability of denim fabrics. The study was conducted concentrating on denim jeans. The fabric samples were locally sourced from the market and then cut out in sizes of 30cm diameter. The drapability was assessed using a control drape meter of the model YG811D. Drapeability assessment has been done on the basis of changes in drape coefficient (DC), drape parameters, node parameters and structural parameters. Also, a method of expressing drape, node and structural parameters relating to the drape coefficient of fabrics has been developed. This method involves the area of polygon area. The results were analyzed in terms of correlation coefficients.

DECLARATION

I **KYEBAKOLA KENETH** declare to the best of my knowledge that the piece of this project proposal is a result of my research and efforts and it has never been presented or submitted to any institution or university for an academic award.

DATE ..18/12/2020.....

SIGNATURE .....

APPROVAL

This project proposal has been submitted for examination with approval from the following supervisors:

Dr. NIBIKORA ILDEPHONSE

MAIN SUPERVISOR

Date: .....

Signature .....

MR. GODIAS TUMUSIIME

CO-SUPERVISOR

Signature.....

Date: .....

DEDICATION

I dedicate this final year project proposal to my parents; Mr. DAUSON KYEBAKOLA and Mrs. BARBRA NAMUKOBE who have always stood by my side ensuring that may stay in school is a success from the initial stages of my academic life up to date. May the almighty God grant you all the best.

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LIST OF ACRONYMS

DD	:	Drape degree
ELP	:	Equivalent loop perimeter
DC	:	Drape coefficient
GSM	:	Gram per square meter
SP	:	Shadow perimeter
ANOVA	:	Analysis of variance
DPA	:	Drape profile area
FDI	:	Fold depth index
A	:	Amplitude

1 CHAPTER ONE

1.1 INTRODUCTION

This chapter presents the general information relevant to the research and it clearly shows the problem of interest for the intended research. It as well shows how this study will help reduce the problem through the fulfillment of a number of objectives listed.

1.2 BACK GROUND

In general, drapeability is described as a phenomenon of fabric-fold formation, which arises when a fabric hangs down without the influence of external forces. Fabric drape is defined as the ability of a fabric (a circular specimen of known size) to deform when suspended under its own weight in specified conditions. (Ragab A, 2017).

The ancient Greeks successfully modeled fabric drape as a static geometrical system in their stone statues. They started a mathematics of movement in which curves were thought of as tracings made by moving points. Curves were also analyzed instant by instant trough the technique of slicing into infinitely fine segments. The first study in deformations of fabrics was conducted by Peirce (Peirce, 1937). Drape is an important factor when presenting the aesthetics and functionality of both, the fabric and the created garment. Basically, fabric drape is not an independent fabric property. It depends on the fabric's parameters such as structure, yarn type, fiber content, as well as its finishing treatments. In addition, we have to take into account that each time a fabric is draped, it hangs in a slightly different configuration.

The drapeability of textile materials can be evaluated subjectively and objectively. Subjective evaluation includes the rating of drape profile, but the results depend on the person evaluating, and the prevailing fashion. Due to the limitations of individuals' assessments, from the lack of reproducibility to inconsistent agreement between assessors etc., researchers have worked on interpreting drape quantitatively. To measure this quality, it is important to find a reliable, efficient and accurate method to reflect fabric real drape characteristics properly. Different studies have been carried out concerning the development of drape meters to make the measurement process easier, more accurate, less dependent on operator skills and to find a satisfactory presentation for drape and proposing alternative fabric drape parameters (which was sometimes a result of drape meter development). Moreover, the development of dynamic drape-meters enabled researchers to study dynamic drape behavior similar to the human body motion. (Reham Sanad*, 2019)

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