

**A Model for Predicting the Stretch and Recovery Test Results  
of Single Jersey Fabric**

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## Declaration

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The above candidate has carried out research for the Masters Dissertation under my Supervision.

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## Table of Content

<i>Declaration</i>	1
<i>Acknowledgements</i>	2
<i>Table of Contents</i>	3
<i>List of Keywords</i>	4
<i>List of Tables</i>	5
<i>List of Figures</i>	6
<i>Abstract</i>	1
<b>Chapter 1: Introduction</b>	9
1.1 Background	9
1.2 Motivation for the Research	10
1.3 Aims and Research Questions	10
1.4 Methodology of the Research	11
1.5 The Thesis Structure	12
<b>Chapter 2: Literature Review</b>	14
2.1 Single Jersey Fabric	14
2.2 Stretch and Recovery Test for Single jersey Fabric	15
2.3 Related Studies	18
<b>Chapter 3: Theoretical Framework</b>	21
3.1 Selection of Stretch and Reveoery test results for the impleementation of Theoretical Framework	21
3.2 Development of the Theoretical Framework	22
<b>Chapter 4: Methodology of the Research</b>	25
4.1 Research Strategy followed in the study	25
4.2 Construction of the Research Instrument	27
<b>Chapter 5: Data Analysis and Results</b>	31
5.1 Introduction	31
5.2 Descriptive Statistics	31
5.3 Data Analysis	32
5.4 Research Findings	59
<b>Chapter 6: Conclusion</b>	65
6.1 Introduction	65
6.2 Reexamine the Research Questions	65
6.3 Shortcomes	67
6.4 Limitations	67
6.5 Suggestions for Future Work	67
References	68
Appendix	

## **List of Keywords**

ANalysis Of VAriance (ANOVA)

Constant Rate of Extension (CRE)

Elongation

Elongation

Elustane

Extension

Fabric

Growth

Modulus

Recovery

Single Jersey

Stitch

Stretch and Recovery

Tensile Testing

Visual Studio (VS)

Warp

Weft

## List of Tables

<i>Table 4.1: Details of single jersey fabric use for the sample</i>	<u>28</u>
<i>Table 4.2: Details of the data set</i>	<u>29</u>
<i>Table 5.1: Descriptive Statistics of Variables of Warp Direction Test</i>	<u>31</u>
<i>Table 5.2: Descriptive Statistics of Variables of Weft Direction Test</i>	<u>32</u>

## List of Figures

Figure 1.1 Methodology of the Research	12
Figure 2.1: Single jersey Stitch	14
Figure 2.2: Tuck Stitch	15
Figure 2.3: CRE Machine	15
Figure 2.4: Elongation Property	16
Figure 2.5: Un- recovered Elongation Property	16
Figure 2.6: Tensile Testing Test Procedure	17
Figure 3.1: Theoretical Framework of the Research	22
Figure 4.1: Flow of the Research	26
Figure 4.2: Fabric Specimen for warp and weft	27
Figure 5.1: Correlation Analysis for Elustane variable and Modulus2	32
Figure 5.2: Regression Output of Modulus2- Warp variable	33
Figure 5.3: Boxcox Transformation for Modulus2	33
Figure 5.4: Regression Output of Modulus2 - Wrap Variable After the Transformation	34
Figure 5.5: Anova Test of Modulus2 - Wrap Variable	34
Figure 5.6: Normality Test of Residuals in Modulus2 - Wrap Variable	35
Figure 5.7: Correlation Analysis for Elustane variable and Modulus5	36
Figure 5.8: Regression Output of Modulus5- Warp variable	36
Figure 5.9: Boxcox Transformation for Modulus5	37
Figure 5.10: Regression Output of Modulus5 - Wrap Variable After the Transformation	37
Figure 5.11: Anova Test of Modulus5 - Wrap Variable	38
Figure 5.12: Normality Test of Residuals in Modulus5 - Wrap Variable	38
Figure 5.13: Correlation Analysis for Elustane variable and Extention	39
Figure 5.14: Regression Output of Extention - Warp variable	39
Figure 5.15: Boxcox Transformation for Extention	40
Figure 5.16: Regression Output of Extention - Wrap Variable After the Transformation	40
Figure 5.17: Anova Test of Extention - Wrap Variable	41
Figure 5.18: Normality Test of Residuals in Extention - Wrap Variable	41
Figure 5.19: Correlation Analysis for Elustane variable and Growth	42
Figure 5.20: Regression Output of Growth - Warp variable	43
Figure 5.21: Boxcox Transformation for Growth	43
Figure 5.22: Regression Output of Growth - Wrap Variable After the Transformation	44
Figure 5.23: Anova Test of Growth - Wrap Variable	44
Figure 5.24: Normality Test of Residuals in Growth - Wrap Variable	45
Figure 5.25: Correlation Analysis for Elustane variable and Modulus2	46
Figure 5.26: Regression Output of Modulus2- Weft variable	46
Figure 5.27: Boxcox Transformation for Modulus2	47
Figure 5.28: Regression Output of Modulus2 - Weft Variable After the Transformation	47
Figure 5.29: Anova Test of Modulus2 - Weft Variable	48
Figure 5.30: Normality Test of Residuals in Modulus2 - Weft Variable	48
Figure 5.31: Correlation Analysis for Elustane variable and Modulus5	49
Figure 5.32: Regression Output of Modulus5- Weft variable	50
Figure 5.33: Boxcox Transformation for Modulus5	50
Figure 5.34: Regression Output of Modulus5 - Weft Variable After the Transformation	51
Figure 5.35: Anova Test of Modulus5 - Weft Variable	51

<i>Figure 5.36: Normality Test of Residuals in Modulus5 - Weft Variable</i>	52
<i>Figure 5.37: Correlation Analysis for Elustane variable and Extention</i>	53
<i>Figure 5.38: Regression Output of Extention - Weft variable</i>	53
<i>Figure 5.39: Boxcox Transformation for Extention</i>	54
<i>Figure 5.40: Regression Output of Extention - Weft Variable After the Transformation</i>	54
<i>Figure 5.41: Anova Test of Extention - Weft Variable</i>	55
<i>Figure 5.42: Normality Test of Residuals in Extention - Weft Variable</i>	55
<i>Figure 5.43: Correlation Analysis for Elustane variable and Growth</i>	56
<i>Figure 5.44: Regression Output of Growth - Weft variable</i>	57
<i>Figure 5.45: Boxcox Transformation for Growth</i>	57
<i>Figure 5.46: Regression Output of Growth - Weft Variable After the Transformation</i>	58
<i>Figure 5.47: Anova Test of Growth - Weft Variable</i>	58
<i>Figure 5.48: Normality Test of Residuals in Growth - Weft Variable</i>	59
<i>Figure 5.49: Trend on elstaine &amp; modulus at 2<sup>nd</sup> load curve</i>	60
<i>Figure 5.50: Trend on elastain &amp; modulus at 5<sup>th</sup> load curve</i>	61
<i>Figure 5.51: Trend on elastain &amp; extension</i>	62
<i>Figure 5.52: Trend on elastain &amp; growth</i>	63
<i>Figure 5.53: Stretch and Recovery Tool</i>	64



## Abstract

In the Textile Testing field fabrics are tested based on the international standards recorded in test methods. The stretch and recovery test is one of the important textile tests used to measure the extension and recovery of a fabric under a target load. This test is performed using a tensile testing machine, usually of the Constant Rate of Extension (CRE) type. The time allocated to complete the test is considerably high due to the high time requirement for preconditioning, conditioning, sample preparation and testing. The stretch and recovery test report results are very critical and urgent most of the time. However, due to the time constraint, it may not be possible to deliver the reports to the customers on time. Therefore, this research has been carried out to predict the stretch and recovery test results for single jersey fabric without performing the physical test procedures.

This research aims to design a mathematical model to predict the stretch and recovery for single jersey fabric. In achieving this objective, the quantitative method was applied. A theoretical framework was constructed grounded on a comprehensive analysis of the related literature. Resultant models derived during the analysis stage, then validated, and a simple tool has been implemented to be used by the laboratory staff. The model has shown more than 76% of accuracy, but it could be further validated by increasing the sample size and by revising the assumptions made during the study.

This research has a great benefit to textile laboratory staff since they can utilize minimum resources for Stretch and Recovery Test. As the CRE machine requires more duration for the test specimen preparation and more time to complete the test, testing staff will be able to use the simple application developed based on the model derived as the result of this study.