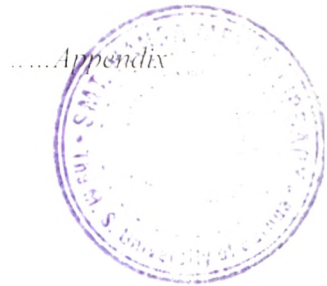# APPENDIX

APPENDIX

Calculation for correlation coefficient

The coefficient of correlation is a numerical measure of intensity or degree of linear relationship between 2 or more variables and is denoted by "r" and can be found from the following formula:-

$$r = \frac{n \sum x_i y_i - \sum x_i \sum y_i}{\sqrt{n \sum x_i^2 - (\sum x_i)^2} \sqrt{n \sum y_i^2 - (\sum y_i)^2}}$$

The Value of correlation always lies between +1 and -1 which can be symbolically represented as $-1 \leq r \leq +1$ where "r" represents the coefficient of correlation. The value of "r" obtained from a sample data if closer to +1 or -1, it indicates a stronger relation between the variables. On the other hand the value of "r" nearing zero indicates a weaker relation. There may be two types of correlation positive of negative. If an independent variable moves upwards then the dependent variable would also move upward which shows a positive correlation. If, the independent variable moves downwards then the dependent variable would move downward which shows a negative correlation. If "r" calculated is coming to +1 or -1 then it shows Perfect positive correlation or Perfect negative correlation. The other variation of "r" is shown in the Table 1.

Table 1: Variation of 'r'

High Degree if	$\pm \frac{3}{4} < r < \pm 1$
Moderate degree if	$\pm \frac{1}{4} < r < \pm \frac{3}{4}$
Low degree or poor if	$0 \leq r \leq \pm \frac{1}{4}$

For the study correlation between fabric count, cloth cover, thickness and weight per unit area was calculated.

1. Correlation between Thread Count and %T

Here, X= Thread Count and Y=%T

Table 2: Thread Count

X_i	Y_i	X_iY_i	X^2_i	Y^2_i
84	9.31	782.04	7056	86.6761
77	7.3	562.1	5929	53.29
94	6.93	651.42	8836	48.0249
73	5.52	402.96	5329	30.4704
84	7.95	659.85	7056	63.2025
77	5.41	421.98	5929	29.2681
489	**42.42**	**3480.35**	**40135**	**310.932**

r = 0.461

The result of above table is that there is a moderate positive correlation between Thread Count and percent UVR transmission (r = 0.4242). The same which can be seen as under:-

	Thread Count	%T
Cotton Plain	84	9.31
Cotton Twill	77	7.30

The value of the thread count for Cotton decreases from 84 to 77 there is a decrease in value of percent UVR transmission from 9.31 to 7.30

Hence, we can conclude that there is a positive correlation as there is a decrease in percent UVR transmission when the value of the Thread Count decreases.

	Thread Count	%T
Polyester Plain	94	6.93
Polyester Twill	73	5.52

The value of the thread count for Polyester decreases from 94 to 73, there is a decrease in value of percent UVR transmission from 6.93 to 5.52.

Hence, we can conclude that there is a negative correlation, as there is a decrease in percent UVR transmission when the value of the thread count decreases.

	Thread Count	%T
Polyester Cotton Plain	83	7.95
Polyester Cotton Twill	78	5.41

The value of the thread count for Polyester Cotton decreases from 83 to 78, there is a decrease in value of percent UVR transmission from 7.95 to 5.41.

Hence, we can conclude that there is a negative correlation as there is a decrease in percent UVR transmission when the value of the thread count decreases.

2. Correlation between Cloth Cover and %T

Here, X= Cloth Cover and Y=%T

Table 3: Cloth Cover

Xi	Yi	XiYi	X^2i	Y^2i
23.93	9.31	222.788	572.645	86.6761
27.26	7.3	198.998	743.108	53.29
21.24	6.93	147.193	451.138	48.0249
25.39	5.52	140.153	644.652	30.4704
24.97	7.95	198.512	623.501	63.2025
28.83	5.41	155.97	831.169	29.2681
151.62	**42.42**	**1063.61**	**3866.21**	**310.932**

r = -0.4259

The Result of above table is that there is a moderate positive correlation between Cloth Cover and percent UVR transmission (r = -0.4259). The same which can be seen as under:-

	Cloth Cover	%T
Cotton Plain	23.93	9.31
Cotton Twill	27.26	7.30

The value of the Cloth Cover for Cotton increases from 23.93 to 27.26 there is a decrease in value of percent UVR transmission from 9.31 to 7.30

Hence, we can conclude that there is a positive correlation as there is a decrease in percent UVR transmission when the value of the Cloth Cover increases.

	Cloth Cover	%T
Polyester Plain	21.24	6.93
Polyester Twill	25.39	5.52

The value of the Cloth Cover for Polyester increases from 21.24 to 25.39, there is a decrease in value of percent UVR transmission from 6.93 to 5.52.

Hence, we can conclude that there is a negative correlation, as there is a decrease in percent UVR transmission when the value of the Cloth Cover increases.

	Cloth Cover	%T
Polyester Cotton Plain	24.97	7.95
Polyester Cotton Twill	28.83	5.41

The value of the Cloth Cover for Polyester Cotton increases from 24.97 to 28.83, there is a decrease in value of percent UVR transmission from 7.95 to 5.41.

Hence, we can conclude that there is a negative correlation as there is a decrease in percent UVR transmission when the value of the Cloth Cover increases.

3. Correlation between Cloth Thickness and %T

Here, X=Cloth Thickness and Y=%T.

Table 4: Cloth Thickness

X_i	Y_i	X_iY_i	X^2_i	Y^2_i
0.25	9.31	2.3275	0.0625	86.6761
0.48	7.3	3.504	0.2304	53.29
0.17	6.93	1.1781	0.0289	48.0249
0.3	5.52	1.656	0.09	30.4704
0.24	7.95	1.908	0.0576	63.2025
0.44	5.41	2.3804	0.1936	29.2681
1.88	**42.42**	**12.954**	**0.663**	**310.932**

r = -0.3740

The result of above table is that there is a moderate negative correlation between Thickness and percent UVR transmission (r = -0.3740). The same which can be seen as under:-

	Cloth Thickness	%T
Cotton Plain	0.25	9.31
Cotton Twill	0.48	7.30

The value of the cloth thickness for Cotton increases from 0.25 to 0.48 there is a decrease in value of percent UVR transmission from 9.31 to 7.30

Hence, we can conclude that there is a negative correlation as there is a decrease in percent UVR transmission when the value of the cloth thickness increases.

	Cloth Thickness	%T
Polyester Plain	0.17	6.93
Polyester Twill	0.30	5.52

The value of the cloth thickness for Polyester increases from 0.17 to 0.30, there is a decrease in value of percent UVR transmission from 6.93 to 5.52.

Hence, we can conclude that there is a negative correlation, as there is a decrease in percent UVR transmission when the value of the cloth thickness increases.

	Cloth Thickness	%T
Polyester Cotton Plain	0.24	7.95
Polyester Cotton Twill	0.44	5.41

The value of the cloth thickness for Polyester Cotton increases from 0.24 to 0.44, there is a decrease in value of percent UVR transmission from 7.95 to 5.41.

Hence, we can conclude that there is a negative correlation as there is a decrease in percent UVR transmission when the value of the cloth thickness increases.

4. Correlation between Weight / Unit Area and %T

Here, X= Weight / Unit Area and Y=%T

Table 5: Weight / Unit area

Xi	Yi	XiYi	X^2i	Y^2i
123.65	9.31	1151.18	15289.3	86.6761
249.6	7.3	1822.08	62300.2	53.29
93.95	6.93	651.074	8826.6	48.0249
186.62	5.52	1030.14	34827	30.4704
122.11	7.95	970.775	14910.9	63.2025
274.43	5.41	1484.67	75311.8	29.2681
1050.36	**42.42**	**7109.92**	**211466**	**310.932**

r = -0.5733

The Result of above table is that there is a moderate positive correlation between Weight / Unit Area and percent UVR transmission (r = -0.5733). The same which can be seen as under:-

	Weight / Unit Area	%T
Cotton Plain	123.65	9.31
Cotton Twill	249.60	7.30

The value of the Weight / Unit Area for Cotton increases from 123.65 to 249.60 there is a decrease in value of percent UVR transmission from 9.31 to 7.30

Hence, we can conclude that there is a positive correlation as there is a decrease in percent UVR transmission when the value of the Weight / Unit Area increases.

	Weight / Unit Area	%T
Polyester Plain	93.95	6.93
Polyester Twill	186.62	5.52

The value of the Weight / Unit Area for Polyester increases from 93.95 to 186.62, there is a decrease in value of percent UVR transmission from 6.93 to 5.52.

Hence, we can conclude that there is a negative correlation, as there is a decrease in percent UVR transmission when the value of the Weight / Unit Area increases.

	Weight / Unit Area	%T
Polyester Cotton Plain	122.11	7.95
Polyester Cotton Twill	274.43	5.41

The value of the Weight / Unit Area for Polyester Cotton increases from 122.11 to 274.43, there is a decrease in value of percent UVR transmission from 7.95 to 5.41.

Hence, we can conclude that there is a negative correlation as there is a decrease in percent UVR transmission when the value of the Weight / Unit Area increases.