

Influence of Chemical Treatment of Natural Fibre using the SPSS Method

J. Arivudainambi, *T. Menakadevi, G. Suresh

Adhiyamaan college of Engineering, Hosur, TamilNadu, India.

*Corresponding Author Email: menaka_sar@rediffmail.com

Abstract. "Chemical Treatment of Natural Fibres: Chemical treatment involves the conversion of hazardous waste into non-toxic gases to alter the chemical characteristics of waste. Treatment methods include decreasing solubility in water, neutralization or pH adjustment (neutralization or precipitation), oxidation and reduction, hydrolysis and photosynthesis, chemical oxidation (ozonation, electrolytic oxidation, hydrogen peroxide), and chemical removal (alkali metal dichlorine, alkali). Various chemical treatment processes, including metallization and activated processes, such as chemical precipitation, neutralization absorption, disinfection (chlorine, ozone, UV light), and ion exchange, are commonly used. Natural fibres obtained from the plant kingdom include cotton, flax, jute, bamboo, sisal, and coconut husks. Plant fibres consist of seed hairs, such as cotton and flax; stem (or bast) fibres like jute; leaf fibres like sisal; and fibres from coconut husks. Animal fibres include secretions such as wool, hair, and silk. This paper reviews various chemical treatments used to modify the natural fibres' properties in natural fibre-reinforced composites. Chemical treatments discussed include alkali treatment, silane treatment, acetylation, benzoylation, acrylation, malate coupling agents, isocyanates, permanganate, and other treatments. These treatments aim to improve the adhesion between the fibre surface and polymer matrix, resulting in decreased water absorption and improved mechanical properties of the composites. The Statistical Package for the Social Sciences, also known as SPSS, is widely used for data analysis. Initially developed in the 1960s, SPSS extended its applications beyond the commercial sector into the social sciences. Attempts to find a suitable expansion for the acronym SPSS have mostly failed. For a period in the early 2000s, it was referred to as "Statistical Packages and Software Services," but eventually, it became simply known as SPSS without a specific abbreviation. Industries like non-metal mineral product manufacturing, general equipment manufacturing, coal mining and washing, textile industry, food manufacturing industry, and special equipment manufacturing can benefit from SPSS. The Cronbach's Alpha reliability result shows that the overall Cronbach's Alpha value for the model is .744, indicating a reliability of 74%. Based on the literature review, a Cronbach's Alpha value above 50% can be considered suitable for analysis."

Keywords: SPSS, Cotton, Jute, Flax, Hemp, Ramie and Sisal.

1. Introduction

Chemical remedies of fibres with untreated fiber composites Compared to Fiber composites Saving treatment was given by Modulus of untreated fibre composite turned out to be more than A better storage modulus become observed within the Silane treated fibre in comparison with NaOH The composite was treated with fibre composite, It is a fine fibre-matrix Confirmed adhesion. Chemical treatments of herbal cellulosic fibres improve compatibility with matrix stages as they lessen the hydrophilicity of the fibres. They concluded that chemical remedies growth of fibrin to the matrix Bonding Residences [2]. Alkali, Silane, Acetylation, Benzoylation, Acrylation, Maleate Coupling Vendors, Isocyanates, permanganate and other chemicals Treatment is for fibre mat and polymer matrix no longer simplest modifies the fibre floor but additionally increases fibre energy. Natural fibres have low density, low strength and They have the advantage of biodegradability. However, the basis of the herbal fibres in the compositions The hazards are between the fibre and the matrix Terrible compatibility and relatively high Moisture absorption. So, fibre Increasingly, chemical solutions are being considered floor houses [1]. Natural fibre reinforced composites. of plant fibres Carbon dioxide is often neutral Carbon dioxide is often neutral Factors derived from burning, in the environment A large amount of carbon dioxide is released. causing Greenhouse effect and Global Climate Change Extension [3]. Corona remedies can be used as pre-treatments to spark off cellulose for additional chemical treatments together with adhesion, or they may be used as whole surface changes. Corona treatment has been shown to increase fibre floor polarity, that is favorable for interplay with hydrophilic polymer matrices. Conversely, a corona discharge can lessen fibre integrity due to floor ablation and

etching. Plasma remedy fibre floor strength, to cause floor move-hyperlinks and to introduce non-reactive groups. The plasma remedy applied to lignocellulosic fibre uses a chilly plasma in which the electrons have very excessive temperatures. Increases, supplying a sputtering impact at the fibre floor [4]. Chemical treatments accomplished on the surface of inexperienced coconut fibre on bodily and chemical homes geared toward capacity H₂O₂, solution and morphology with NaOCl/For this purpose, three Exceptional chemical remedies used and NaOCl/NOH, Chemical composition, thermal stability and from herbs surface additives and Including handling of raw coconut fibre properties were evaluated [5]. Chemicals in the medical literature Treatments are pronounced, and it is difficult to examine the effects received because of the inherent variations of herbal systems from specific geographical areas and unique harvesting, production and processing conditions. Therefore, the intention of this paintings isn't always to check the huge literature on fibre chemical remedies, but to examine the consequences of different treatments on nicely-described flax derived fibres [6]. Chemical treatments previous to apply. Strongly polarized cellulose, in fact, Hydrophobic non-polar polymers are matrices and poor absorption of moisture Inherently incompatible with resistance. Compounds used in outdoor projects Draws on natural fibres to make Herbal fibres Draws on natural fibres to make. Herbal fibres Commonly used solution Functions of solution type and concentration In this article, two There are different types of chemical solutions one of a kind and to fix the surface of herbaceous fibres The interface between the matrix resin Concentrations are also followed to improve communication [7]. Chemical remedies are considered one of the most important areas of contemporary studies. Several authors have centered research at the remedy fibres to improve bonding with the resin matrix Changing fibers is the power of fibers Increase or decrease, so understanding what takes place structurally is of first rate importance inside the weight loss of alpha fibres after alkali remedy; A considerable reduction in fibre diameter may be defined by way of the dissolution of hemicelluloses noted that chemical remedy reduces the radius of alpha fibre. This became easily defined by conformation between cellulose micro fibrils Stabilizing waxes, gums and cementitious materials Partially removed using chemicals Procedures for recognizing that remedies [8]. alkalis+ silanes had been used to improve the adhesion among the natural fibres (jute, ramie, sisal and crowa) and the polymer matrix. Differential scanning calorimetry, thermogravimetry and a dynamic mechanical analysis have been done to look at the thermal residences of the hybrid NFRC. Chemical treatments have been found to growth the thermal balance of composites. Scanning electron microscope photographs confirmed that the chemical treatments altered the morphology of the natural fibres. A rough floor became found in case of alkali dealt with fibre, whereas a thin coating layer turned into formed at the fibre floor at some stage in composite remedy. However, for a few fibres (i.e., sisal and ramie), chemical treatment has a effective impact on composite residences, while for jute and crowa blends, higher behavior become discovered for untreated fibre [9]. Natural fibre reinforced composites have dangers consisting of terrible damping and occasional fibre/ Polymer matrix performance and additional water and hydrophilic to absorb moisture The matrix is due to the presence of herbal cellulose hydrophobic the polymer matrix and Affects interfacial bonding between fibres Chemical solution fibres and polymer of herbal fibres to improve interactions between matrices one of the methods. It is on the fibre surface OH reduces the effective groups present, thereby increasing surface roughness and matrix and The interface between fibres Improves communication method of release the glue Refers to degumming from the fibre. therefore, by treating using chemicals Fixing the surface of the fibre is very important reduce the hydrophilic properties of fibres, and their compatibility with polymers Key used to increase one of the methods is chemical solution [10]. All chemical remedies resulted in increased tensile properties of the fibre. However, double level chemical remedy showed better properties compared to alkaline remedy and single stage remedy. No widespread impact of remedy on thermal balance of fibre became discovered from TGA [11]. Chemical remedy and weight fractionation are some elements considered confirmed better Longitudinal heat compared to approx Thermal behavior for conductivity orientated fibres. Randomly oriented fibres are exact while thermal conductivity in the transverse direction is required. In instances wherein there's bad adhesion among the resin fibre and the matrix, it results in decreased mechanical performance [12]. Chemical remedies alter the floor properties and enhance adhesion to the fly ash-based totally geopolymer matrix. A deterministic screening design of test turned into used to investigate the impact of successive chemical treatments of fibre on its tensile energy, considering the subsequent factors: (1) NaOH withdrawal; (2) soaking time in aluminum salt solution; and (three) the very last pH of the slurry [13]. Natural fibres derived from lignocellulose containing Strongly polarized hydroxyl agents It is hydrophilic in nature. So, those threads Naturally hydrophobic Not compatible with thermoplastics such as polyolefins. Major boundaries of the usage of those polar-hydrophilic fibre and Nonpolarhydrophobic matrix Poor interface between In adhesion and matrices Reinforcements include fibres combining problems because of negative Wetting the fibre with the matrix It ends composites with a weak interface [14]. Natural fibre composites are in comparison. The consequences show that alkali floor changed herbal Surface modified fibres enhance herbal fibre reinforced composites. Composites containing surface changed fibres have shown better tensile residences than untreated fibres. Composite surface changed fibre offers better mechanical properties than unmarried floor changed method besides alkali approach. Fibre composites

surface changed with silane have shown desirable effect electricity houses. Natural fibre contaminants which includes fat, lignins and pectins can be eliminated through surface changes of herbal fibres [15]. The use of herbal fibre bolstered composites beneath numerous environmental conditions has become famous in latest years. Many natural fibres are used as powerful reinforcement in polymer matrices. Fillers inside the shape of fibres or particles are processed with polymers to acquire substances of preferred thermal, mechanical and electrical residences. The properties of fibrous composite materials strongly depend on fibre properties and the use of herbal fibres as reinforcement in plastics are their non-friction, biodegradability, low strength intake and coffee cost. In addition, herbal fibres have decrease density and extra specific residences. The unique mechanical properties of herbal fibres are comparable to traditional reinforcements [16]. Natural fibre in the automotive industry compounds and mild weight herbal want to update artificial Fibre reinforced plastic. However, herb The main disadvantage of fibre is its hydrophilic nature is It is made of herbal fibre compounds Reduces overall performance [17]. Until now, chemical treatments have been greater or much less steeply-priced and/or harmful to the environment and chemical waste should be dealt with and disposed of as it should be. These limitations make the usage of chemical therapy much less appealing. Furthermore, development of the fibre-matrix by chemical treatments is typically obtained on the rate of the because of great degradation and degradation of cellulose chains throughout treatment, which generally has less effect on elongation in the course of this fibre breakup [18]. Natural fibre treatment turned into first organized in separate beakers of 5% and 10% NaOH solution. The dried and extracted fibre become then taken within the beaker and stirred nicely. The beaker changed into positioned in an oven and heated at 70 oC for 2 and a 1/2 hours. The warm fibre inside the beaker changed into neutralized with acid and washed thoroughly with distilled water. Finally the neutralized fibre turned into heated in an oven at 100 oC for 2 hours to completely put off moisture [19]. Natural fibre polymer composites have many programs in almost all fields of engineering. Natural fibres offer superb capacity for diverse industrial programs including reinforcement in polymers and feature top notch effect on socioeconomic improvement. Being fee-powerful, they are nicely-acceptable for use in low-price housing, car interiors, the development enterprise, packaging, garage devices, and the automotive industry. Therefore, they have a chief effect at the socio-monetary development of a country (Chand and Fahim 2008). There are many types of natural fibres like kenaf, flax, oil palm, jute, sisal, hemp. Bamboo and banana fibre. In this century, hobby has expanded in low density, excessive particular electricity, light-weight, low processing charges, renewability, non-toxicity and biodegradability [20].

2. Materials And Method

Cotton: Cotton fibres from cotton plants, specifically cotton The seed coat is the outer layer of plant seeds formed from sheets or shirts Before making, the cotton seeds are first removed from the plant must be separated, and then from the seeds The space between cotton fibres permits cotton to take in and wick moisture far from the skin. Breathable: Gaps within the fibres additionally make cotton cloth breathable. Fine Drapes: Cotton hangs from the frame in a certainly fitted sample. Durable: Cotton is powerful and definitely gets more potent while moist. Upland cotton (*Gossypiumhirsutum*) Egyptian cotton (*Gossypiumbarbadense*) Cambric, canvas, corduroy, denim, flannel, gauze. Cotton is the arena's favorite herbal fibre. Its beauty, comfort, sturdiness and versatility make it a really perfect desire for clothing, bedding, textiles and plenty of different merchandise. As an enterprise, cotton helps the livelihoods of millions of humans - directly and in a roundabout way - round the world.

Jute: Jute fibre is a type of plant fibre widely known for its capability to be spun into strong and coarse threads. Individual hemp fibres are gentle, long and shiny. Plants belonging to the *Corchorus* genus are believed to be the primary producers of this fibre. silk-like luster, for this reason the call golden fibre. The primary use of hemp fibre is in fabrics for packaging a huge variety of agricultural and industrial merchandise requiring baggage, sacks, packs and wraps. Where bulky, sturdy fabrics and ropes immune to stretching are required, jute is widely used because of its low price. Jute is one of the most inexpensive textiles inside the global. Artisan styles of hemp may be greater expensive, with most kinds of this fabric costing approximately \$1 per backyard. This fee is similar to cotton, and is extensively much less luxurious than many types of artificial fabric.

Flax: Flax seeds are very excessive inside the omega-three fatty acid alpha-linolenic acid (ALA). They have been proven to reduce the risk of heart disorder in animal studies by means of reducing irritation inside the arteries (forty seven). Several studies hyperlink ALA to a discounted hazard of stroke, heart assault, and chronic kidney ailment. Nutritionally they are the equal, the most effective difference may be determined in the plant itself. The confusion comes from the 2 biggest English-speaking international locations. In the UK, they distinguish among linseed and linseed, while in the US and Canada, they discuss with each as flax.24-Jan-2019.

Hemp: Hemp seeds are specifically rich in these healthful fat, inclusive Both of these fat are acknowledged for enhancing heart fitness by means of lowering cholesterol, blood strain, and triglycerides. Adding hemp oil to your eating regimen might also lessen your hazard of heart issues within the future. Having said that, Hemp has much

less than 0.3% THC (which is not sufficient to provide you the 'excessive'), which makes it commercially criminal. Whereas Marijuana is any strain of Cannabis plant having greater than 0.3% THC, and THAT makes it fall underneath a confined drug class. Smoking "hemp flower" may be very enjoyable, however it may not make you "feel excessive." That's due to the fact those felony hemp buds are high in CBD however extraordinarily low in THC. Some of our clients mix hemp bud with their "avenue weed" to mellow it out. CBD tends to calm the effects of high THC lines and edibles. It should be permissible most effective if that is the best option in a scientific circumstance prescribed by means of health workers." Non-intoxicating hashish products inclusive of CBD and hemp are considered with the aid of many Islamic jurists to be permissible, in particular whilst prescribed by using a health practitioner as a remedy for an contamination.

Ramie; Rami is a natural fabric from the ancient East, and is a super sustainable alternative to silk. Discover its packages! Also called China Grass or Ramia, ramie is a material derived from natural fibres consisting of linen or bamboo. Find out its features and the way to properly keep it. Ramie is fantastically absorbent and feels dry for a long term. It has 20% absorbency, whereas linen has 30% and cotton has handiest 8%. On hot, humid days, clothes made of ramie are at ease for maximum of the time. On top of that, ramie dries quick, making it a incredible preference for cool, summery clothes. for stain elimination and bleaching can be effectively used on ramie. It is nice to wash ramie clothes whilst they're slightly damp. Ramie cloth is a herbal cloth woven from the bast fibre of the ramie plant. We additionally realize the material as china linen, grass linen or grass material. The fibre is similar to flax, jute or jute in its fine texture³. The cloth is breathable and non-itchy like pure wool and has a herbal white look.

Sisal: Sisal fibre is obtained from agave, Agave sisal and Due to its strength, durability, stretchability, affinity with positive dyestuffs, and coir, its miles immune to degradation in salt water. High fine fibre is transformed into yarn for carpet enterprise. Sisal has a huge sort of makes use of: conventional – rope, Sisal is exceptionally absorbent and holds drinks. If a wet sisal rug is not absolutely dry, it may increase mold and mould, so it's miles essential to apply as little water as possible whilst cleaning. If your sisal rug gets wet, allow it to dry absolutely earlier than putting it returned at the rug pad.

Coir: Due to its splendid moisture retention and exact aeration characteristics, coir is an exquisite growing medium for houseplants. Indoor plants want soil that is free and open so that water can freely disperse and air can flow into. 24-Feb-2020 generally, white coconut fibre is used for spinning in rope making. Its sturdy Resistance to salt water in fishing nets. Brown coconut Stronger and more widespread than white coconut is used. Applications include work removal, brushes, Door mats, rugs, cushions, insulation Includes panels and packaging is the densest and all commercial in nature fibres are very resistant a low degradation price is a first-rate benefit for generating durable products.

Method: SPSS through Basics of SPSS of students using the publications Introductory Statistics and Research Methods strategies the use of step-via-step explanations affords statistical strategies and methods for undertaking Statistical analysis, and statistics All common in the analysis How to avoid defects Explains that in elements. The development of easy- To use statistical software including SPSS, Records are taught and discovered has changed. Students can perform transformations of variables, Graphs of distributions of variables can be constructed, and with the click of a button Select from statistical analysis. Spss statistics is information control, advanced analytics, multivariate analytics, commercial enterprise intelli-gence, and Ocriminal investigation evolved with the aid of IBM is a statistical software program package deal. Long time, spa inc. Was created through, IBM and acquired in 2009. The logo calls for the maximum latest variations in IBM spss in-formation. The " statistical package deal for the social sciences " (spss), a hard and fast software program gear for changing, analyzing, and displaying information, is normally used. Multiple formats are to be had for spss. Numerous upload-on modules can be purchased to increase the software's statistics entry, statistical, or reporting abilities. The core software is referred to as an spss base. The spss advanced models and spss regression version's add-on modules are, in our opinion, the most essential of those for statistical analysis. Additionally, independent programs that connect to spss are available from spas inc. Spss is available in versions for windows (98, 2000, me, nt, and XP), supported by windows 2000 running spss version 11.0.1. Although further versions of the spss will most likely be available by the time this book is re-released, we are certain that the spss instructions provided in each chapter will still apply to the studies outlined.

3. Result And Discussion

TABLE 1. Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Cotton	30	4	1	5	.202	1.106
Jute	30	4	1	5	.230	1.259
Flax	30	4	1	5	.233	1.278
Hemp	30	4	1	5	.209	1.143
Ramie	30	4	1	5	.276	1.512
Sisal	30	4	1	5	.248	1.357
Coir	30	4	1	5	.247	1.351
Valid N (list wise)	30					

Table 1 shows the descriptive statistics values for analysis N, range, minimum, maximum, mean, standard deviation Cotton , Jute , Flax, Hemp , Ramie, Sisal and Coir this also using.

TABLE 2. Frequencies Statistics

		Cotton	Jute	Flax	Hemp	Ramie	Sisal	Coir
N	Valid	30	30	30	30	30	30	30
	Missing	0	0	0	0	0	0	0
Mean		3.13	3.00	3.23	3.27	3.30	3.43	2.97
Std. Error of Mean		.202	.230	.233	.209	.276	.248	.247
Median		3.00	3.00	3.00	3.00	3.00	3.00	3.00
Mode		3	3	3	3	5	5	3
Std. Deviation		1.106	1.259	1.278	1.143	1.512	1.357	1.351
Variance		1.223	1.586	1.633	1.306	2.286	1.840	1.826
Skewness		-.444	.333	-.045	-.269	-.101	-.071	-.025
Std. Error of Skewness		.427	.427	.427	.427	.427	.427	.427
Kurtosis		.204	-.741	-.860	-.071	-1.517	-1.306	-.992
Std. Error of Kurtosis		.833	.833	.833	.833	.833	.833	.833
Range		4	4	4	4	4	4	4
Minimum		1	1	1	1	1	1	1
Maximum		5	5	5	5	5	5	5
Sum		94	90	97	98	99	103	89
Percentiles	25	3.00	2.00	2.00	3.00	2.00	2.00	2.00
	50	3.00	3.00	3.00	3.00	3.00	3.00	3.00
	75	4.00	4.00	4.25	4.00	5.00	5.00	4.00

Table 2 Show the Frequency Statistics in Chemical Treatments of Natural Fibre Cotton , Jute , Flax, Hemp , Ramie, Sisal and Coir curve values are given.

TABLE 3. Reliability Statistics

Cronbach's Alpha Based on Standardized Items	N of Items
.744	7

Table 3 shows the Cronbach's Alpha Reliability result. The overall Cronbach's Alpha value for the model is .744 which indicates 74% reliability. From the literature review, the above 50% Cronbach's Alpha value model can be considered for analysis.

TABLE 4. Reliability Statistic individual

	Cronbach's Alpha if Item Deleted
Cotton	.710
Jute	.758
Flax	.704
Hemp	.721
Ramie	.695
Sisal	.712
Coir	.685

Table 4 Shows the Reliability Statistic individual parameter Cronbach's Alpha Reliability results. The Cronbach's Alpha value for Cotton - .710, Jute - .758, Flax - .704, Hemp - .721, Ramie - .695, Sisal - .712, Coir - .685 this indicates all the parameter can be considered for analysis.

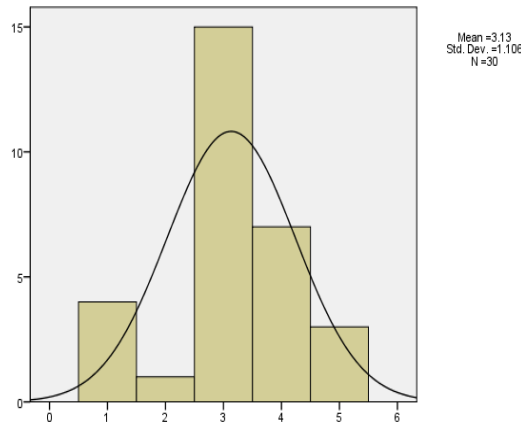


FIGURE 1. Cotton

Figure 1 shows the histogram plot for Cotton from the figure it is clearly seen that the data are slightly Left skewed due to more respondent chosen 3 for Cotton except the 2 value all other values are under the normal curve shows model is significantly following normal distribution.

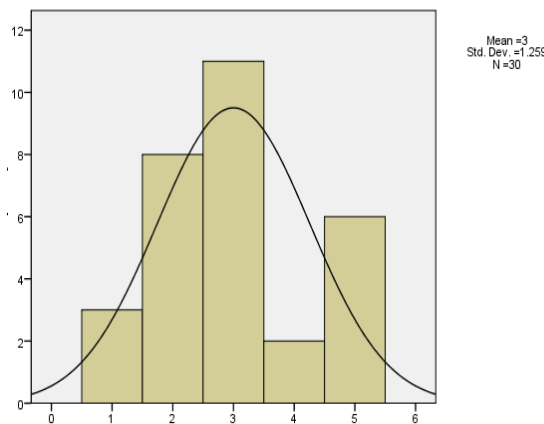


FIGURE 2. Jute

Figure 2 shows the histogram plot for Jute from the figure it is clearly seen that the data are slightly Left skewed due to more respondent chosen 3 for Jute except the 2 value all other values are under the normal curve shows model is significantly following normal distribution.

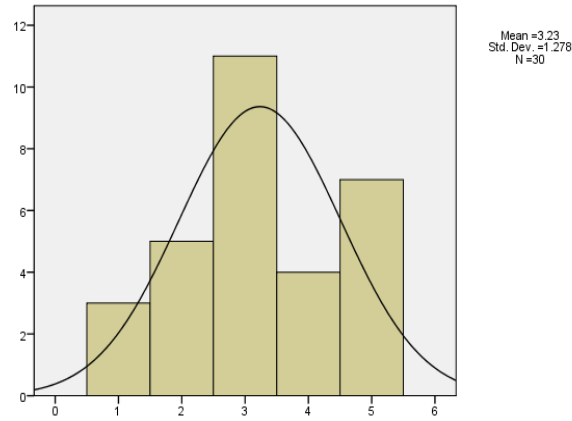


FIGURE 3. Flax

Figure 3 shows the histogram plot for Flax from the figure it is clearly seen that the data are slightly Left skewed due to more respondent chosen 3 for Flax except the 3 value all other values are under the normal curve shows model is significantly following normal distribution.

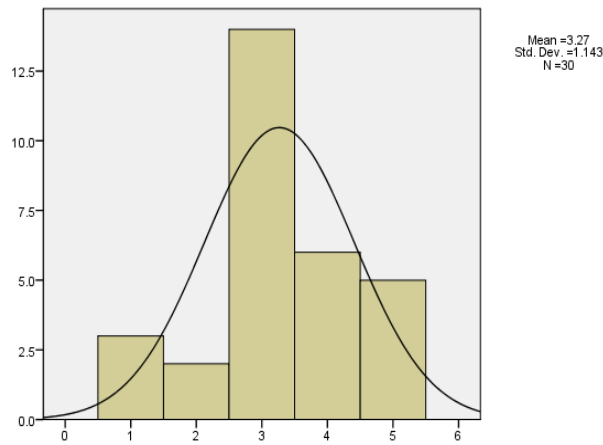


FIGURE 4. Hemp

Figure 4 shows the histogram plot for Hemp from the figure it is clearly seen that the data are slightly Left skewed due to more respondent chosen 3 for Hemp except the 2 value all other values are under the normal curve shows model is significantly following normal distribution.

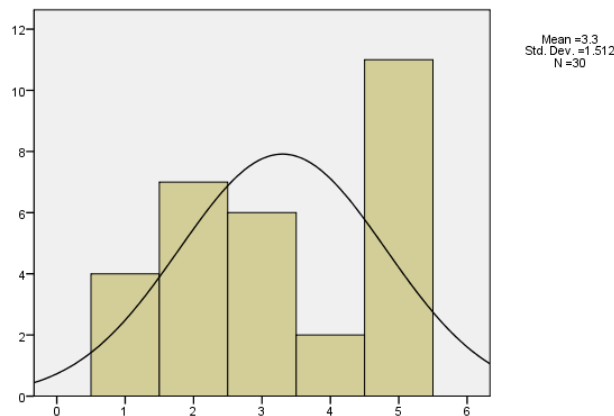


FIGURE 5. Ramie

Figure 5 shows the histogram plot for Ramie from the figure it is clearly seen that the data are slightly Right skewed due to more respondent chosen 5 for Ramie the 2 value all other values are under the normal curve shows model is significantly following normal distribution.

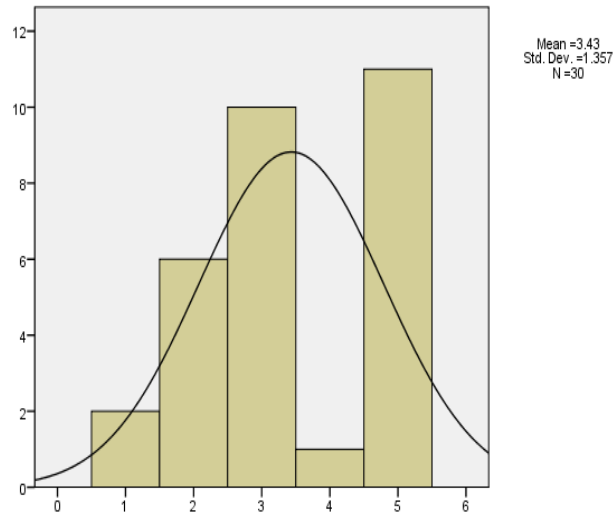


FIGURE 6. Sisal

Figure 6 shows the histogram plot for Sisal from the figure it is clearly seen that the data are slightly left skewed due to more respondent chosen 5 Sisal except the 2 value all other values are under the normal curve shows model is significantly following normal distribution.

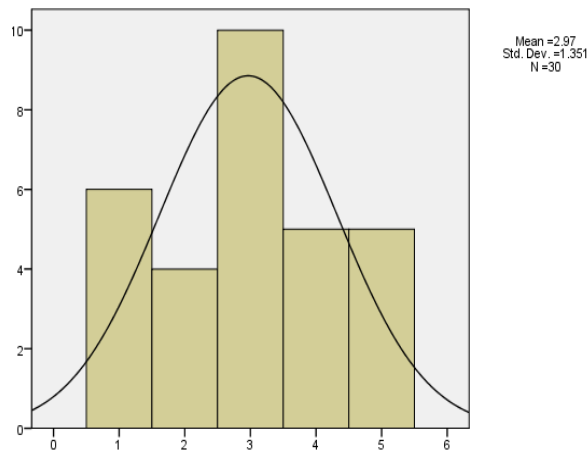


FIGURE 7. Coir

Figure 7 shows the histogram plot for Coir from the figure it is clearly seen that the data are slightly Right skewed due to more respondent chosen 3 for Coir except the 2 value all other values are under the normal curve shows model is significantly following normal distribution.

TABLE 5. Correlations

	Cotton	Jute	Flax	Hemp	Ramie	Sisal	Coir
Cotton	1	.149	.368*	.407*	.264	.305	.372*
Jute	.149	1	.214	.096	.290	.020	.203
Flax	.368*	.214	1	.499**	.319	.198	.344
Hemp	.407*	.096	.499**	1	.172	.212	.296
Ramie	.264	.290	.319	.172	1	.506**	.427*
Sisal	.305	.020	.198	.212	.506**	1	.497**
Coir	.372*	.203	.344	.296	.427*	.497**	1
*. Correlation is significant at the 0.05 level (2-tailed).							
**. Correlation is significant at the 0.01 level (2-tailed).							

Table 5 shows the correlation between motivation parameters for Cotton. For Hemp is having highest correlation with Jute and having lowest correlation. Next the correlation between motivation parameters for Jute. For Ramie is having highest correlation with Sisal and having lowest correlation. Next the correlation between motivation parameters for Flax. For Hemp is having highest correlation with Sisal and having lowest correlation. Next the correlation between motivation parameters for Hemp. For Flax is having highest correlation with Jute and having lowest correlation. Next the correlation between motivation parameters for Ramie. For Sisal is having highest correlation with Hemp and having lowest correlation. Next the correlation between motivation parameters for Sisal. For Ramie is having highest correlation with Jute and having lowest correlation. Next the correlation between motivation parameters for Coir. For Sisal is having highest correlation with Jute and having lowest correlation.

4. Conclusion

Chemical treatment (hazardous waste) is the conversion Conversion of hazardous waste into non-toxic gases, To change or change the chemical characteristics of waste Treatment methods used, for example in water By decreasing solubility. Chemical remedies of fibres compared to untreated fibre composites. It was located that Storage treated with fibre composites Modulus of untreated fibre composite turned out to be more than A better storage modulus become observed within the Silane treated fibre in comparison with NaOH The composite was treated with fibre composite, It is a fine fibre-matrix Confirmed adhesion. Chemical treatments of herbal cellulosic fibres improve compatibility with matrix stages as they lessen the hydrophilicity of the fibres. Cotton fibres from cotton plants, specifically cotton The seed coat is the outer layer of plant seeds formed from sheets or shirts Before making, the cotton seeds are first removed from the plant must be separated, and then from the seeds The space between cotton fibres permits cotton to take in and wick moisture far from the skin. Breathable: Gaps within the fibres additionally make cotton cloth breathable. Fine Drapes: Cotton hangs from the frame in a certainly fitted sample. Durable: Cotton is powerful and definitely gets more potent while moist. Flax seeds are very excessive inside the omega-three fatty acid alpha-linolenic acid (ALA). They have been proven to reduce the risk of heart disorder in animal studies by means of reducing irritation inside the arteries (forty seven). Several studies hyperlink ALA to a discounted hazard of stroke, heart assault, and chronic kidney ailment. Hemp seeds are specifically rich in these healthful fat, inclusive Both of these fat are acknowledged for enhancing heart fitness by means of lowering cholesterol, blood strain, and triglycerides. Adding hemp oil to your eating regimen might also lessen your hazard of heart issues within the future. Having said that, Hemp has much less than 0.Three% THC (which is not sufficient to provide you the 'excessive'), which makes it commercially criminal. Whereas Marijuana is any strain of Cannabis plant having greater than 0.Three% THC, and THAT makes it fall underneath a confined drug class. Smoking "hemp flower" may be very enjoyable, however it may not make you "feel excessive." That's due to the fact those felony hemp buds are high in CBD however extraordinarily low in THC. Rami is a natural fabric from the ancient East, and is a super sustainable alternative to silk. Discover its packages! Also called China Grass or Ramia, ramie is a material derived from natural fibres consisting of linen or bamboo. Find out its features and the way to properly keep it. Ramie is fantastically absorbent and feels dry for a long term. It has 20% absorbency, whereas linen has 30% and cotton has handiest 8%. On hot, humid days, clothes made of ramie are at ease for maximum of the time. Non-metal mineral product industry, General equipment manufacturing, Mining and washing of coal, Textile industry, Food manufacturing industry, Special equipment manufacturing. The Cronbach's Alpha Reliability result. The overall Cronbach's Alpha value for the model is .744

which indicates 74% reliability. From the literature review, the above 50% Cronbach's Alpha value model can be considered for analysis.

Reference

- [1]. Reddy, Rajala Ashok, K. Yoganandam, and V. Mohanavel. "Effect of chemical treatment on natural fibre for use in fibre reinforced composites–Review." *Materials Today: Proceedings* 33 (2020): 2996-2999.
- [2]. Li, Xue, Lope G. Tabil, and Satyanarayan Panigrahi. "Chemical treatments of natural fibre for use in natural fibre-reinforced composites: a review." *Journal of Polymers and the Environment* 15, no. 1 (2007): 25-33.
- [3]. Karthi, N., K. Kumaresan, S. Sathish, S. Gokulkumar, L. Prabhu, and N. Vigneshkumar. "An overview: Natural fibre reinforced hybrid composites, chemical treatments and application areas." *Materials today: proceedings* 27 (2020): 2828-2834.
- [4]. Fuqua, Michael A., Shanshan Huo, and Chad A. Ulven. "Natural fibre reinforced composites." *Polymer Reviews* 52, no. 3 (2012): 259-320.
- [5]. Brígida, A. I. S., V. M. A. Calado, L. R. B. Gonçalves, and M. A. Z. Coelho. "Effect of chemical treatments on properties of green coconut fibre." *Carbohydrate Polymers* 79, no. 4 (2010): 832-838.
- [6]. Biagiotti, Jerico, Debora Puglia, Luigi Torre, Jose M. Kenny, Aitor Arbelaiz, Guillermo Cantero, Cristina Marieta, Rodrigo Llano-Ponte, and Iñaki Mondragon. "A systematic investigation on the influence of the chemical treatment of natural fibres on the properties of their polymer matrix composites." *Polymer Composites* 25, no. 5 (2004): 470-479.
- [7]. Sepe, R., F. Bollino, L. Boccarusso, and F. Caputo. "Influence of chemical treatments on mechanical properties of hemp fibre reinforced composites." *Composites Part B: Engineering* 133 (2018): 210-217.
- [8]. Rokbi, Mansour, Hocine Osmani, Abdellatif Imad, and Nouredine Benseddiq. "Effect of chemical treatment on flexure properties of natural fibre-reinforced polyester composite." *procedia Engineering* 10 (2011): 2092-2097.
- [9]. Neto, J. S. S., R. A. A. Lima, D. K. K. Cavalcanti, J. P. B. Souza, R. A. A. Aguiar, and M. D. Banea. "Effect of chemical treatment on the thermal properties of hybrid natural fibre-reinforced composites." *Journal of Applied Polymer Science* 136, no. 10 (2019): 47154.
- [10]. Sathish, S., N. Karthi, L. Prabhu, S. Gokulkumar, D. Balaji, N. Vigneshkumar, TS Ajeem Farhan, A. AkilKumar, and V. P. Dinesh. "A review of natural fibre composites: Extraction methods, chemical treatments and applications." *Materials Today: Proceedings* 45 (2021): 8017-8023.
- [11]. Hossain, Syed Imam, Mahbub Hasan, Md N. Hasan, and Azman Hassan. "Effect of chemical treatment on physical, mechanical and thermal properties of ladies finger natural fibre." *Advances in materials science and engineering 2013* (2013).
- [12]. Jawalkar, C. S., and Suman Kant. "Critical review on chemical treatment of natural fibres to enhance mechanical properties of bio composites." *Silicon* 14, no. 10 (2022): 5103-5124.
- [13]. Malenab, Roy Alvin J., Janne Pauline S. Ngo, and Michael Angelo B. Promentilla. "Chemical treatment of waste abaca for natural fibre-reinforced geopolymer composite." *Materials* 10, no. 6 (2017): 579.
- [14]. John, Maya Jacob, and Rajesh D. Anandjiwala. "Recent developments in chemical modification and characterization of natural fibre-reinforced composites." *Polymer composites* 29, no. 2 (2008): 187-207.
- [15]. Godara, S. S. "Effect of chemical modification of fibre surface on natural fibre composites: A review." *Materials Today: Proceedings* 18 (2019): 3428-3434.
- [16]. Paul, Sherey Annie, Abderrahim Boudenne, Laurent Ibos, Yves Candau, Kuruvilla Joseph, and Sabu Thomas. "Effect of fibre loading and chemical treatments on thermophysical properties of banana fibre/polypropylene commingled composite materials." *Composites Part A: Applied Science and Manufacturing* 39, no. 9 (2008): 1582-1588.
- [17]. Rajesh, M., and Jeyaraj Pitchaimani. "Mechanical characterization of natural fibre intra-ply fabric polymer composites: Influence of chemical modifications." *Journal of Reinforced Plastics and Composites* 36, no. 22 (2017): 1651-1664.
- [18]. Fiore, V., T. Scalici, F. Nicoletti, G. Vitale, M. Prestipino, and A. Valenza. "A new eco-friendly chemical treatment of natural fibres: Effect of sodium bicarbonate on properties of sisal fibre and its epoxy composites." *Composites Part B: Engineering* 85 (2016): 150-160.

- [19]. Siddika, Salma, Fayeka Mansura, Mahbub Hasan, and Azman Hassan. "Effect of reinforcement and chemical treatment of fibre on the properties of jute-coir fibre reinforced hybrid polypropylene composites." *Fibres and polymers* 15, no. 5 (2014): 1023-1028.
- [20]. Shuhimi, Fairuz Fazillah, Mohd Fadzli Bin Abdollah, M. A. Kalam, H. H. Masjuki, Ashafi'E. Mustafa, Sushella Edayu Mat Kamal, and Hilmi Amiruddin. "Effect of operating parameters and chemical treatment on the tribological performance of natural fibre composites: A review." *Particulate Science and Technology* 35, no. 5 (2017): 512-524.