

Clustering Technique for Analyzing Lifestyle of Health and Sustainability of Undergraduate Students

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Abstract: *In this study, we delve into the realm of undergraduate students' perceptions of Adopting a pioneering two-step Clusters Analysis method promotes a lifestyle centered on well-being and environmental sustainability. This method uncovers a multitude of distinctive clusters, with the geographical location of these undergraduates playing a pivotal role in shaping these groupings. Our investigation extends to evaluating the influence of various predictors on the formation of these clusters, revealing unique relationships between each cluster and the predictors examined. Notably, our findings illuminate that as the number of clusters increases, so does the complexity of predictor variables. Furthermore, we unearth a compelling revelation - that Location emerges as the paramount predictor, with differing perspectives on Lifestyle of Health and Sustainability conspicuously correlated with the geographic origins of these undergraduate students.*

Keywords: Lifestyle of Health and Sustainability, Cluster Analysis, Simple Random Sampling, Predictors, Undergraduate Students.

I. INTRODUCTION

The 21st century has witnessed a remarkable transformation in the way people lead their lives, giving rise to a dynamic and ever-evolving concept known as “Lifestyle”. This century has been marked by rapid technological advancements, globalization, shifting societal norms, and changing priorities, all of which have collectively reshaped the way individuals and communities across the globe approach and define their lifestyles. As we navigate the complexities of this new era, understanding the multifaceted dimensions of lifestyle in the 21st century becomes crucial (Adhikari, 2023). This brief exploration delves into the diverse facets that constitute this contemporary way of life, encompassing everything from technology-driven habits to sustainable living (Haldar et al., 2022), and the profound impact these changes have on our daily experiences, values, and aspirations. In this time health (Khatun et al., 2022) and environmental sustainability are two critical pillars of our global well-being that are intrinsically interconnected. In an era characterized by rapid population growth, urbanization, and industrialization, the health of our planet and the health of its inhabitants are more intertwined than ever before. This symbiotic relationship has profound implications for the long-term well-being of both humanity and the ecosystems that support life on Earth. Environmental factors play a significant role in determining human health outcomes. Air and water quality, exposure to hazardous chemicals, access to green spaces, and the availability of clean energy sources all contribute to the overall health of populations. Conversely, the health of individuals and societies directly impacts the environment. Unhealthy practices, such as excessive resource consumption, pollution, and deforestation, can accelerate environmental degradation and threaten the planet's sustainability. Lifestyle encompasses the intricate web of choices, behaviours, habits, and values that define how individuals live their lives. There are various components of Lifestyle of Health and Sustainability (LOHAS) – Physical Fitness (PF), Mental Health (MH), Emotional Health (EH), Spiritual Health (SH), Environmentalism (ENV), and Social Consciousness (SC), which are taken up in this study through two-step cluster analysis. Clustering is a fundamental technique in statistics that plays a pivotal role in data analysis, pattern recognition, and machine learning. It is a method used to group similar data points together based on certain characteristics or features they share, ultimately revealing hidden structures within a dataset. In clustering, the primary goal is to partition a dataset into

distinct groups, known as clusters, in such a way that data points within the same cluster are more similar to each other than to those in other clusters. Clustering techniques help statisticians and data scientists make sense of large and complex datasets by simplifying them into manageable subsets, enabling better understanding and decision-making.

II. LITERATURE REVIEW

Review on LOHAS:

Dian et al. (2022) conducted a study on the mediating role of environmental sustainability between green human resources management, green supply chain, and green business: A conceptual model and found that a positive relationship between green HRM, green supply chain, environmental sustainability, and green businesses and industries in Central Java, providing practical managerial recommendations to enhance the performance of manufacturing companies, all while significantly contributing to the resource-based theory and literature of human resources management (HRM) and supply chain management.

Stillwell et al. (2023) conducted a study on Understanding resource consumption and sustainability in the built environment and found that Resource Consumption and Sustainability in the Built Environment,' examines infrastructure and sustainability through various lenses, addressing local and global factors, urban dependencies, and digital technology's role in resource consumption's impact on the environment and society, fostering adaptive planning, climate neutrality, equity, and well-being.

Hendriyani et al. (2023) conducted a study on The Implementation of the Independent Curriculum through Independent Project on Sustainable Lifestyle Theme for Grade 10 Students and found that The Independent Curriculum offers students additional time for exploring concepts and competencies, including the Pancasila Student Profile Strengthening Project, which focuses on promoting a sustainable lifestyle and has shown a 70.7% positive impact on class X students' environmental awareness, as per research results.

Kumari (2022) conducted a study on Sustainable Lifestyle for Healthy Environment and found that Our choices in food, transportation, lifestyle, and environmental care profoundly impact the planet and its health. Taking smart steps, such as sustainable food choices, green home updates, recycling, and alternative transportation, can collectively shape a more sustainable future at home, work, and in the community.

Islam & Bhuiyan (2018) conducted a study on Sundarbans mangrove forest of Bangladesh: causes of degradation and sustainable management options and found that The Sundarbans face threats from various sources, including human activities and natural factors, endangering its biodiversity and ecosystems. To address these challenges, a comprehensive approach involving improved management, scientific studies, stakeholder engagement, and sustainable strategies is proposed for the preservation of Sundarbans and other mangrove forests worldwide.

Roberts et al. (2022) conducted a study on Positive lifestyle behaviours and emotional health factors are associated with low back pain resilience and found that People adopting optimal lifestyle behaviours and positive emotional factors are more likely to maintain high function despite low back pain (LBP), as suggested by this study's findings.

Duarte et al. (2023) conducted a study on Lifestyle Entrepreneurship as a Vehicle for Leisure and Sustainable Tourism and found that the plans for growth prioritize economic progress, environmental balance, public health, and social context, promoting sustainable development practices through decision tools for entrepreneurs and destination managers; utilizing renewable biomass energy for ecological responsibility by producing energy from plant and animal waste.

Scozzese & Gelli (2023) conducted a study on Lifestyle as a Branding Strategy for the Sustainable Brand and found that in response to the climate crisis and evolving consumer preferences, lifestyle branding emerges as a sustainable strategy, fostering eco-consciousness through innovative climate solutions and advocacy for environmental stewardship.

Dey & Bairagya (2023) conducted a study on the green economy is a road map for a sustainable lifestyle and found that The concept of a green economy, crucial for current research, transforms quality of life, fosters sustainability, plans long-term economic restoration across sectors, promotes a carbon-free environment, boosts non-conventional energy, conserves resources, drives economic and social development, making its implementation reliant on public mindset and goodwill for positive change in people's lives.

Salloum et al. (2021) conducted a study on Sustainability of Tobacco Treatment Programs in the Cancer Centre Cessation Initiative and found that Cancer Centre Cessation Initiative (C3I) catalysed tobacco treatment nationwide, offering ongoing learning, adaptive programs, sustainability assessment, implementation strategy role, health impact sustainability, research advancement, policy alignment, SWG knowledge dissemination for cancer care organizations in and beyond C3I.

Reviews on Cluster Analysis:

Sen et al. (2023a) conducted a study on Clustering Technique for Analysing Leadership Style of the Head of the Institutions and found that the number of clusters increases, the number of predictors also increases. Location consistently emerges as the most crucial predictor, while the significance of other predictors varies with cluster count. Overall, similar leadership style views are observed based on institution location.

Saha et al. (2021) conducted a study on Analysis of Attitude Towards Yoga Among College Students Using Clustering Techniques and found that the location of the college is another important aspect for forming clusters, with the majority of rural male and female students sharing similar opinions about yoga practices.

Adhikari & Sen (2023a) conducted a study on Cluster Analysis on Institutional Commitment and Organizational Climate and found that Teachers' views on institutional commitment and organizational climate are similar across gender and rural-urban settings.

Ansary et al. (2023) conducted a study on Clustering Technique for Analysing Attitude towards Value-oriented Education among Undergraduate Students and found that Location was identified as the most significant predictor, while the study also showed no correlation between academic achievement and attitudes toward value-oriented education among undergraduate students.

Mohanta et al. (2023) conducted a study on Introspecting Institutional Commitment Using Cluster Analysis and found that clusters emerged (Female and Male, Rural and Urban Institutions) to explore Institutional Climate, with cluster number positively impacting Predictor influence, where Professional Commitment was the most influential dimension in cluster formation.

Adhikari & Sen (2023b) conducted a study on Recent Trends of Cluster Analysis in Education and found that the role of predictor counts in education cluster formation, its relation to socio-psychological variables, the increase in predictor values with cluster count.

Gorain et al. (2022) conducted a study on Relationship and Cluster Analysis among Internet Dependency, Social Isolation and Personality and found that correlations between Internet Dependency, Social Isolation, and personality factors (Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness) in arts and science learners, revealing mainly low to mediocre correlations, with three distinct clusters: separate male and female arts clusters and a distinct science cluster.

Cluster Analysis is a strong measure like distance measured by Mahalanobis Distance in educational situations (Adhikari, 2023; Adhikari et al., 2023a; 2023b; Mahato & Sen, 2021; Sen & Pal, 2020; Sen et al., 2023a; Sen et al., 2023b; Sen et al., 2023c; Adhikari, 2023).

III. OBJECTIVES OF THE STUDY

- To find out pair wise relationship among different dimensions of LOHAS.
- To find out the cluster using independent variables – stream, gender and location and dependent variables- physical fitness, mental health, emotional health, spiritual health, environmentalism, and social consciousness.
- To find out the importance of the predictors of the clusters for formation of clusters.

IV. METHODOLOGY

- **Method:** This research employs the descriptive survey method.
- **Population:** All the undergraduate students of Purulia district of West Bengal.
- **Sample:** To undertake the research, work a sample of 151 undergraduate students were taken.
- **Sampling procedure:** Simple random sampling technique has been applied to collect data for the study.

Tools used:

“Lifestyles of Health and Sustainability” Scale used in this study given by Choi and Feinberg (2021). This scale used to collect the data from samples of undergraduate students.

Statistical techniques used:

The research employs the Product Moment Method to compute the correlation coefficient, while for the purpose of categorizing the entire sample into distinct clusters, the research utilizes a Two-Step Clustering technique.

V. RESULT AND DISCUSSION

Correlations		LOHAS	PF	MH	EH	SH	ENV	SC
LOHAS	Pearson Correlation	1	.663**	.718**	.667**	.588**	.893**	.715**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
PF	Pearson Correlation	.663**	1	.505**	.334**	.148	.440**	.285**
	Sig. (2-tailed)	.000		.000	.000	.069	.000	.000
MH	Pearson Correlation	.718**	.505**	1	.326**	.399**	.533**	.493**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
EH	Pearson Correlation	.667**	.334**	.326**	1	.413**	.489**	.372**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
SH	Pearson Correlation	.588**	.148	.399**	.413**	1	.444**	.298**
	Sig. (2-tailed)	.000	.069	.000	.000		.000	.000
ENV	Pearson Correlation	.893**	.440**	.533**	.489**	.444**	1	.694**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
SC	Pearson Correlation	.715**	.285**	.493**	.372**	.298**	.694**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	

** . Correlation is significant at the 0.01 level (2-tailed).

Table 1 Coefficient of correlation for lifestyle of health and sustainability and its dimensions

From table 1 Lifestyle of Health and Sustainability is significantly correlated (.01 level of significance) with physical fitness, mental health, emotional health, spiritual health, environmentalism, social consciousness for undergraduate students. Physical fitness is significantly correlated (.01 level of significance) with mental health, emotional health, environmentalism, social consciousness but insignificantly correlated with spiritual health for undergraduate students. Mental health is significantly correlated (.01 level of significance) with emotional health, spiritual health, environmentalism, social consciousness for undergraduate students. Emotional health is significantly correlated (.01 level of significance) with spiritual health, environmentalism, social consciousness for undergraduate students. Spiritual health is significantly correlated (.01 level of significance) with environmentalism, social consciousness for undergraduate students. Environmentalism is significantly correlated (.01 level of significance) with, social consciousness for undergraduate students.

Above mentioned results showed that pair wise relationships are significant at .01 level of significances. This is the conclusion about objective 1 which states “to find out pair wise relationship among different dimensions of LOHAS”.

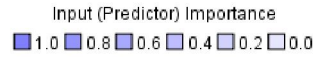
Clusters

Input (Predictor) Importance
 1.0 0.8 0.6 0.4 0.2 0.0

Cluster	2	1
Label		
Description		
Size	60.3% (91)	39.7% (60)
Inputs	LOCALITY Rural (100.0%)	LOCALITY Urban (70.0%)
	STREAM Arts (100.0%)	STREAM Science (51.7%)
	SC 11.41	SC 11.98
	ENV 38.01	ENV 39.47
	LOHAS 103.74	LOHAS 106.45
	EH 15.04	EH 15.35
	SH 10.07	SH 10.33
	GENDER Male (65.9%)	GENDER Male (61.7%)
	MH 11.24	MH 11.45
	PF 17.97	PF 17.87

Table 2: Formulation of 2 clusters

Clusters



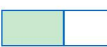
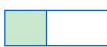

Cluster	2	1	3
Label			
Description			
Size	 58.3% (88)	 39.7% (60)	 2.0% (3)
Inputs	LOCALITY Rural (100.0%)	LOCALITY Urban (70.0%)	LOCALITY Rural (100.0%)
	LOHAS 106.20	LOHAS 106.45	LOHAS 31.33
	ENV 38.94	ENV 39.47	ENV 10.67
	STREAM Arts (100.0%)	STREAM Science (51.7%)	STREAM Arts (100.0%)
	SC 11.69	SC 11.98	SC 3.00
	EH 15.41	EH 15.35	EH 4.33
	MH 11.52	MH 11.45	MH 3.00
	PF 18.34	PF 17.87	PF 7.00
	SH 10.30	SH 10.33	SH 3.33
	GENDER Male (64.8%)	GENDER Male (61.7%)	GENDER Male (100.0%)

Table 3: formation of 3 clusters

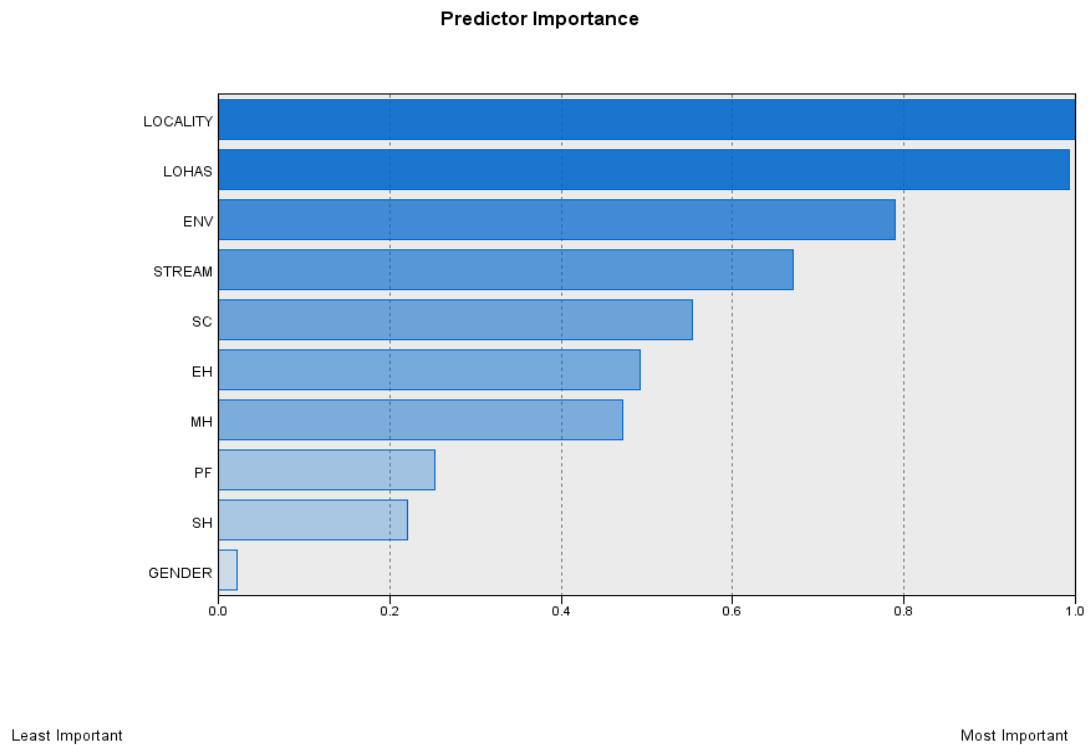
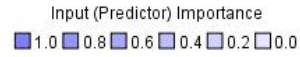


Figure 2: Predictor importance for the clusters described in Table 3

Table 3 represents the clusters formed by undergraduate students in which cluster 1 is consisting of urban students (70.0%), dominated by male undergraduate students (61.7%) and science undergraduate students (51.7%) and is 39.7% of the total sample size. Cluster 2 is consisting of rural undergraduate students (100%), dominated by arts undergraduate students (100%), and male undergraduate students (64.8%) and made up of 58.3% of total sample size. Cluster 3 consisting of rural undergraduate students (100%), dominated by arts undergraduate students (100%), and male undergraduate students (100%) and is total sample size 2.0%. From figure 2 it is clear that locality, LOHAS, Environmentalism, and stream are major predictor of clusters, where Social Consciousness, Emotional Health, Mental Health, are mediocre predictors and Spiritual Health, Gender, Physical Fitness are very low predictors of the cluster mentioned in Table 3.

Clusters







Cluster	1	3	2	4
Label				
Description				
Size	 38.4% (58)	 37.7% (57)	 21.9% (33)	 2.0% (3)
Inputs	LOCALITY Urban (72.4%)	LOCALITY Rural (100.0%)	LOCALITY Rural (100.0%)	LOCALITY Rural (100.0%)
	GENDER Male (63.8%)	GENDER Male (100.0%)	GENDER Female (100.0%)	GENDER Male (100.0%)
	LOHAS 106.21	LOHAS 105.74	LOHAS 107.45	LOHAS 31.33
	ENV 39.33	ENV 38.70	ENV 39.64	ENV 10.67
	STREAM Arts (50.0%)	STREAM Arts (100.0%)	STREAM Arts (93.9%)	STREAM Arts (100.0%)
	SC 11.93	SC 11.53	SC 12.09	SC 3.00
	EH 15.50	EH 15.40	EH 15.15	EH 4.33
	MH 11.38	MH 11.39	MH 11.88	MH 3.00
	PF 17.88	PF 18.58	PF 17.88	PF 7.00
	SH 10.19	SH 10.14	SH 10.82	SH 3.33

Table 4: formation of 4 step cluster

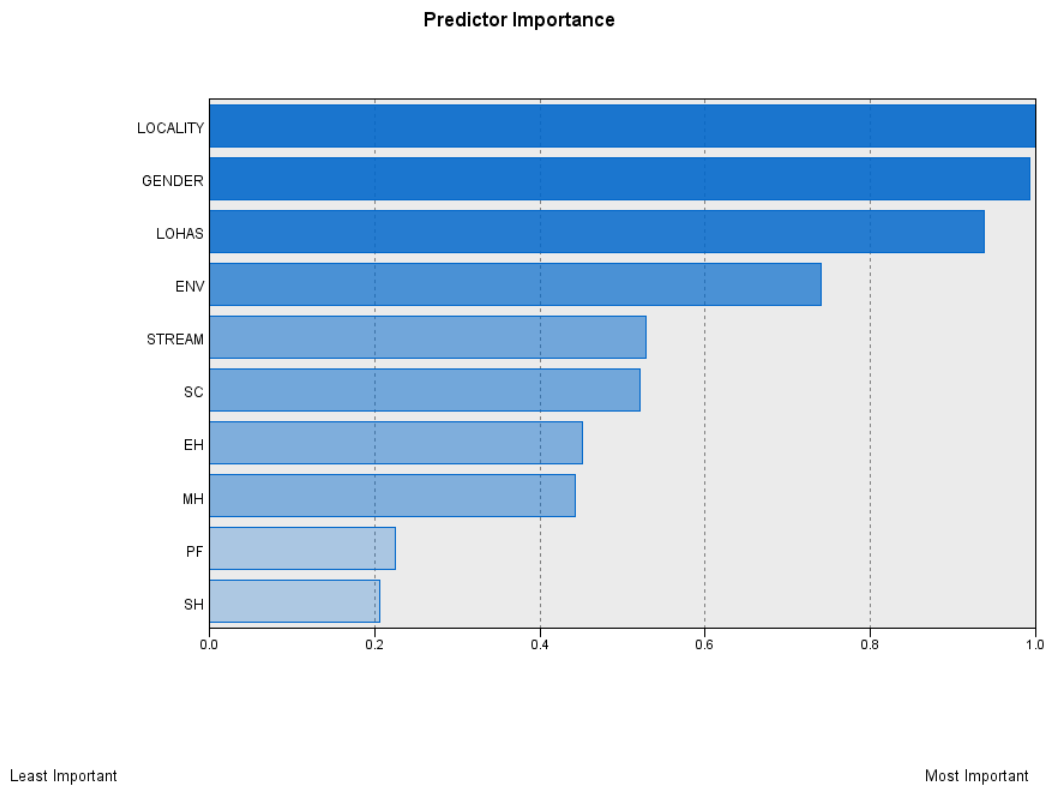


Figure 3: Predictor importance for the clusters described in table 4

Table 4 represents the clusters formed by undergraduate students in which cluster 1 is consisting of urban students (72.4%), dominated by male undergraduate students (63.8.7%) and arts undergraduate students (50.0%) and is 38.4% of the total sample size. Cluster 2 consisting of rural undergraduate students (100%), dominated by arts undergraduate students (93.9%), and female undergraduate students (100%) and made up of 21.9% of total sample size. Cluster 3 consisting of rural undergraduate students (100%), dominated by arts undergraduate students (100%), and male undergraduate students (100%) and is total sample size 37.7%. cluster 4 consisting of rural undergraduate students (100%), dominated by male undergraduate students (100%), and arts undergraduate students (100%), and is total sample size 2.0%. From figure 3 it is clear that locality, LOHAS, Environmentalism, and gender are major predictor of clusters, where stream, Social Consciousness, Emotional Health, Mental Health, are mediocre predictors and Spiritual Health, Physical Fitness are very low predictors of the cluster mentioned in Table 4.

Clusters

Input (Predictor) Importance
 1.0 0.8 0.6 0.4 0.2 0.0

Cluster	4	3	1	2	5
Label					
Description					
Size	37.7% (57)	21.9% (33)	19.9% (30)	18.5% (28)	2.0% (3)
Inputs	STREAM Arts (100.0%)	STREAM Arts (93.9%)	STREAM Arts (96.7%)	STREAM Science (100.0%)	STREAM Arts (100.0%)
	LOCALITY Rural (100.0%)	LOCALITY Rural (100.0%)	LOCALITY Urban (100.0%)	LOCALITY Rural (57.1%)	LOCALITY Rural (100.0%)
	GENDER Male (100.0%)	GENDER Female (100.0%)	GENDER Female (53.3%)	GENDER Male (82.1%)	GENDER Male (100.0%)
	LOHAS 105.74	LOHAS 107.45	LOHAS 106.13	LOHAS 106.29	LOHAS 31.33
	ENV 38.70	ENV 39.64	ENV 39.23	ENV 39.43	ENV 10.67
	SC 11.53	SC 12.09	SC 11.77	SC 12.11	SC 3.00
	EH 15.40	EH 15.15	EH 15.47	EH 15.54	EH 4.33
	MH 11.39	MH 11.88	MH 11.47	MH 11.29	MH 3.00
	SH 10.14	SH 10.82	SH 11.33	SH 8.96	SH 3.33
	PF 18.58	PF 17.88	PF 16.87	PF 18.96	PF 7.00

Table 5: formation of 5 step clusters

Predictor Importance

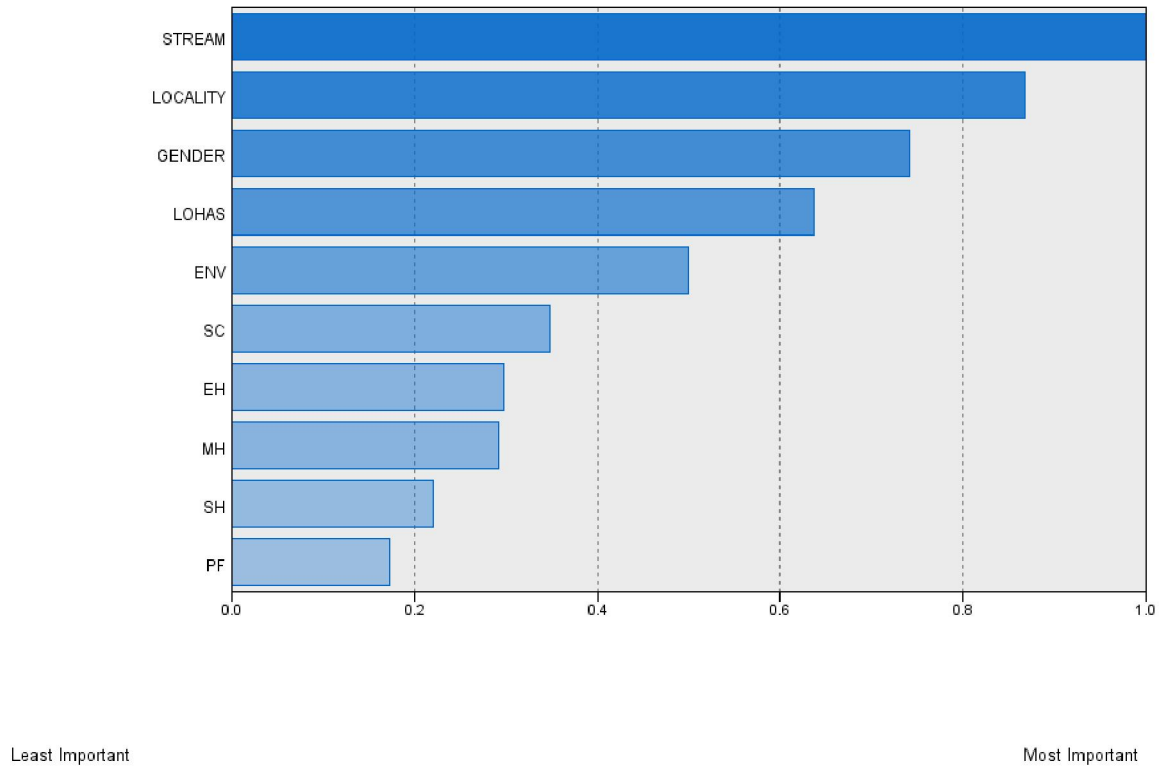


Figure 4: Predictor importance for the clusters described in table 5

Table 5 represents the clusters formed by undergraduate students in which cluster 1 is consisting of urban students (100%), dominated by female undergraduate students (53.3%) and arts undergraduate students (96.7%) and is 19.9% of the total sample size. Cluster 2 consisting of science undergraduate students (100%), dominated by male undergraduate students (82.1%), and rural undergraduate students (57.1%) and made up of 21.9% of total sample size. Cluster 3 consisting of rural undergraduate students (100%), dominated by arts undergraduate students (93.9%), and female undergraduate students (100%) and is total sample size 21.9%. cluster 4 consisting of rural undergraduate students (100%), dominated by male undergraduate students (100%), and arts undergraduate students (100%), and is total sample size 37.7%. cluster 5 consisting of rural undergraduate students (100%), dominated by arts undergraduate students (100%), male undergraduate students (100%) and is sample size 2.0%. From figure 4 it is clear that locality, LOHAS, stream, and gender are major predictor of clusters, where Environmentalism is mediocre predictors and Social Consciousness, Emotional Health, Mental Health, Spiritual Health, Physical Fitness are very low predictors of the cluster mentioned in Table 5.

To fulfil objective 2 and objective 3, let us consider the following table:

Number of clusters	High predictor	Mediocre predictor	Low predictor
2	Locality and Stream	Social Consciousness, Environmentalism, LOHAS	Emotional Health, Mental Health, Spiritual Health, Physical Fitness, Gender
3	Locality, LOHAS, Environmentalism, and Stream	Social Consciousness, Emotional Health, Mental Health	Spiritual Health, Gender, Physical Fitness

4	Locality, LOHAS, Environmentalism, and Gender	Stream, Social Consciousness, Emotional Health, Mental Health	Spiritual Health, Physical Fitness
5	Locality, LOHAS, Stream, and Gender	Environmentalism	Social Consciousness, Emotional Health, Mental Health, Spiritual Health, Physical Fitness

Table 6: Cluster and Predictor summary

Table 6 represents the number of clusters and their predictors. When number of clusters are taken into consideration, variation in cluster size and predictors are observed. Interestingly, when number of clusters 3, 4 and 5 are considered, smallest cluster (2% of total size) remained unchanged. So, to make remark about objective 2, which states “to find out the cluster using independent variables- stream, gender and location and dependent variables- physical fitness, mental health, emotional health, spiritual health, environmentalism, and social consciousness”, it may be opined that some dependent variables together with some independent variables are responsible for cluster formation. Next, let us consider objective 3 which states “To find out the importance of the predictors of the clusters for formation of clusters”, it was found that when there are two clusters, Locality and stream are the important predictor of the cluster. With the increase of one more cluster, Locality, LOHAS, Environmentalism, and Stream become four important predictors but, when four cluster are considered predictors like Locality, LOHAS, Environmentalism, and Gender become important predictors. When the number of clusters are increased to five, Locality, LOHAS, Stream, and Gender play significant role for the formation of the cluster.

VI. CONCLUSION

In summary, the analysis reveals a fascinating pattern: as the number of clusters increases, the array of influential predictors expands in complexity. Initially, with just two clusters, locality and stream emerge as pivotal factors. However, the introduction of a third cluster ushers in LOHAS, Environmentalism, and stream as significant predictors. Progressing to four clusters, gender joins the influential lineup. Upon reaching five clusters, a noteworthy transformation occurs, with most predictors assuming significance in shaping cluster formation, barring only social consciousness, emotional health, mental health, spiritual health, and physical fitness. In essence, our findings underscore the dynamic relationship between the number of clusters and the salient predictors, with locality consistently emerging as the foremost influencer. Ultimately, this study highlights that undergraduates' perspectives on lifestyle of Health and Sustainability exhibit striking variations contingent upon their geographical location.

REFERENCES

- [1]. Adhikari, A. (2023). Application of Mahalanobis Distance in Education and Educational Psychology: A Mini Review. *Innovare Journal of Education*, 11(4). 5-7.
- [2]. Adhikari, A. (2023b). Socio-Educational Perspectives: A Study on Human Adjustment. *EPR International Journal of Research & Development (IJRD)*. 8(1), 97-101
- [3]. Adhikari, A., & Sen, S. (2023a). Cluster Analysis on Institutional Commitment and Organizational Climate. *International Journal of Research Publication and Reviews*, 4(5), 4974-4988.
- [4]. Adhikari, A., & Sen, S. (2023b). Recent Trends of Cluster Analysis in Education. *International Research Journal of Modernization in Engineering Technology and Science*, 5(8), 1858-1861.
- [5]. Adhikari, A., Gayen, P., Mahato, R. C., Pal, I., & Sen, S. (2023a). Multi-dimensional Data Analysis in Education: Accumulation and Comparison among Variables. *International Journal of Research Publication and Reviews*, 4(5), 2243-2245.
- [6]. Adhikari, A., Gayen, P., Sutradhar, A., & Sen, S. (2023b). Measure for Measure: Statistics in Education. *International Journal of Research Publication and Reviews*. 4(5). 4239-4243.

- [7]. Adhikari, A., Mahato, R.C., Gorain, S.C., & Sen, S. (2023). A Review on Parametric and Non-Parametric Test in Education. *International Journal of Research and Analytical Reviews (IJRAR)*, 10(2), 796-801.
- [8]. Ansary, K., Ansary, S., Adhikari, A., & Sen, S. (2023). Clustering Technique for Analysing Attitude towards Value-oriented Education among Undergraduate Students. *International Journal of Research Publication and Reviews*, 4(5), 5576-5584.
- [9]. Cancer Centre Cessation Initiative Sustainability Working Group (2021). Sustainability of Tobacco Treatment Programs in the Cancer Centre Cessation Initiative. *Journal of the National Comprehensive Cancer Network: JNCCN*, 19, 16–20.
- [10]. Choi, S., & Feinberg, R. A. (2021). The LOHAS (Lifestyle of health and sustainability) Scale Development and Validation. *Sustainability*, 13(4), 1598.
- [11]. Dey, B., & Bairagya, S. (2023). The Green Economy Is a Road Map for A Sustainable Lifestyle. *International journal of multidisciplinary educational research*, 12(1), 34-36.
- [12]. Dian, W., Pambudi, W. F., Janny, A. D., Bintang, S., Sukrisno, & Kundori, K. (2022). The mediating role of environmental sustainability between green human resources management, green supply chain, and green business: A conceptual model. *Uncertain Supply Chain Management*, 10(3), 1-13.
- [13]. Duarte, M., Dias, Á., Sousa, B., & Pereira, L. (2023). Lifestyle Entrepreneurship as a Vehicle for Leisure and Sustainable Tourism. *Int. J. Environ. Res. Public Health*, 20, 3241.
- [14]. Gorain, S. C., Saha, B., Maji, S., & Sen, S. (2022). A Study on Relationship and Cluster Analysis among Internet Dependency, Social Isolation and Personality. *International Journal of Research Publication and Reviews*, 3(1), 884-888.
- [15]. Haldar, P., Roy, S., Gorain, S.C., Adhikari, A. & Saha, B. (2022). Measuring Attitude towards Sustainable Development among Trainee Teachers in Purulia District of West Bengal. *American Journal of Educational Research*, 10(12). 682-696.
- [16]. Hendriyani, M. E., Rafenia, V., Maharani, S., & Al-Azis, H. (2023). The Implementation of the Independent Curriculum through Independent Project on Sustainable Lifestyle Theme for Grade 10 Students. *Jurnal Pendidikan Indonesia Gemilang*, 3(2), 242-253.
- [17]. Islam, D., Bhuiyan, M. (2018). Sundarbans Mangrove Forest of Bangladesh: Causes of degradation and sustainable management options. *Environmental Sustainability*, 1, 113–131.
- [18]. Khatun, S., Ansary, K., and Adhikari, A. (2022). Attitude Towards Yoga Education among Undergraduate Students. *EPRA International Journal of Multidisciplinary Research (IJMR)*, 8(12). 9-13
- [19]. Kumari, S. (2022). Sustainable Lifestyle for Healthy Environment. *EIACP: Geodiversity and Impact on Environment*, 27(3), 17-21.
- [20]. Mahato, R. C. & Sen, S. (2021). Application of Mahalanobis Distance to Determine the Dynamical Nature of Academic Stress, Self-efficacy in Mathematics and Anxiety in Mathematics. *International Journal of Advances in Engineering and Management (IJAEM)*. 3(5). 1398-1401
- [21]. Mohanta, R., Adhikari, A., Pal, I., & Sen, S. (2023). Introspecting Institutional Commitment Using Cluster Analysis. *International Research Journal of Education and Technology*, 5(4), 198-217.
- [22]. Mohanta, R., Sen, S., Adhikari, A., & Pal, I. (2023). Perceptual Environment: A Study on Organizational Climate Using Cluster Analysis. *International Journal of Research Publication and Reviews*, 4(4). 1336-1346.
- [23]. Roberts, K. E., Beckenkamp, P. R., Ferreira, M. L., Duncan, G. E., Calais-Ferreira, L., Gatt, J. M., & Ferreira, P. (2022). Positive lifestyle behaviours and emotional health factors are associated with low back pain resilience. *Eur Spine J*, 31(12), 3616-3626.
- [24]. Saha, B., Sen, S., & Adhikari, A. (2021). Analysis of Attitude Towards Yoga Among College Students Using Clustering Techniques. *EPRA International Journal of Multidisciplinary Research (IJMR)*. 7(9), 308-314.
- [25]. Scozzese, G., & Gelli, M. (2023). Lifestyle as a Branding Strategy for the Sustainable Brand. *European Scientific Journal*, ESJ, 19(22), 1.

- [26]. Sen, S. & Pal, I. (2020). Mahalanobis Distance: A Study on Achievement of Science and Mathematics. *International Journal of Creative Research Thoughts*, 8(7). 2542-2547.
- [27]. Sen, S., Adhikari, A., Ansary, K., & Roy, S. (2023a). Clustering Technique for Analyzing Leadership Style of the Head of the Institutions. *International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)*, 3(3), 220-228.
- [28]. Sen, S., Gayen, P., Pal, I., Sutradhar, A., Ansary, K., Mahato, R.C., & Adhikari, A. (2023b). Comparison among different leadership styles of head of the institution of West Bengal by Mahalanobis distance. *International Research Journal of Modernization in Engineering Technology and Science*. 5(4). 5005-5010
- [29]. Sen, S., Gayen, P., Pal, I., Sutradhar, A., Ansary, K., Mahato, R.C., & Adhikari, A. (2023c). Comparison among Different Leadership Styles of Head of the Institution of West Bengal by Mahalanobis Distance. *International Research Journal of Modernization in Engineering Technology and Science*, 5(4). 5005-5010.
- [30]. Stillwell, A. S., Cominola, A., & Beal, C. D. (2023). Understanding resource consumption and sustainability in the built environment. *Environmental Research Infrastructure and Sustainability*, 3(3), 1-4.