An International Multidisciplinary Journal
अनन्यशास्त्रम्
(A Unique Treatise of Knowledge)
ISSN:3049-3927 (Online)
Volume: 01 | Issue: 03 | December: 2025
Research Article

ANANYAŚĀSTRAM:
An International Multidisciplinary Journal
(A Unique Treatise of Knowledge)
Peer-Reviewed | Refereed | Open Access Journal
DOI: https://doi.org/10.64328/aimjv01i03003

A Study of Financial Literacy Through CSR: SBI

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Abstract

This study delves into the Corporate Social Responsibility (CSR) initiatives of the State Bank of India (SBI) in advancing financial literacy. Financial literacy, or the capacity to save, budget, incur debt, and invest, is still a developing world challenge, particularly in countries like India where vast populations remain unbanked. Analyzing this, CSR has evolved into a key driver of financial inclusion and social progress, especially since the Companies Act (2013) made CSR contributions obligatory for qualifying companies.

The paper also describes how SBI, the country's largest public sector bank, has incorporated financial literacy as a part of its CSR strategy. The CSR spending of SBI over the last eight years has reflected consistency, expansion, and effective use of resources. Though earlier years indicate overspending over sanctioned budgets—evidencing flexibility and responsiveness—the more recent years demonstrate controlled planning with full utilization of sanctioned funds. Schemes like Financial Literacy Centers (FLCs), Digital Literacy Programs, Gram Seva projects, and collaborations with NGOs indicate the bank's multifaceted approach towards mitigating social issues, especially in rural and semi-urban areas.

The results show that SBI considers CSR not just a compliance obligation but a vision for sustainable inclusive growth. The bank's proactiveness even in non-budget years emphasizes its strong commitment to social responsibility. Nevertheless, the core research gap continues to exist since most studies, including this one, are based on secondary data from reports and publications. Lack of primary data restricts the measurement of behavior outcomes and long-term impact on beneficiaries.

The research concludes that SBI has emerged as a socially responsible banking leader with CSR initiatives that have a significant contribution to financial literacy, sustainability, and inclusive growth. The recommendations are to increase financial literacy outreach, make digital financial inclusion a top priority,

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enhance monitoring and impact assessments, align CSR with Sustainable Development Goals, and develop community-led projects. Future research needs to include direct

Keywords: Mental Wellness, Yoga Analytics, Machine Learning, Data Science.

Introduction

The yoga and mental health research have become more important as people are getting more worried about lifestyle diseases like depression, diabetes, obesity, heart disease, etc. and are realising the important advantages of holistic wellness which means being well in completely in body, mind and spirit. People are getting more interested in gaining knowledge about yoga and mental health as it helps overall wellbeing and it also prevents diseases caused by modern lifestyle. This researches mainly produce complex and large amount of data sets such as physiological readings like heart rate and blood pressure, questionnaires responses about stress, sleep and lifestyle, data from wearable sensor like fitness band or heart rate monitoring device and recording of yoga practices .mainly this different kind of data are large, complex and unstructured which makes them difficult to analyze using traditional methods. Data science includes advance modern technique like machine learning, predictive models and statistical analysis which helps in analyse this complex, large scale, and unstructured data and it also provide powerful set of tools which help in discovering useful insights from the data, Identify correlation, connection and trends, understand cause-and-effect relationships between data sets, and it also help in design scientifically based programs and actions to take which improves physical, mental, and emotional health. Merging verity of data from various sources including wearable devices, mobile application and medical reports, helps researchers to know effects and impact of yoga practices on individuals' overall health and help in offering programs which will help them improve their overall wellbeing.

Even after many opportunities there are some difficulties and challenges in analysis of large scale, complex and heterogeneous health and yoga datasets. Heterogeneous data means data is in different from each other, this include data like Continuous physiological data as heart rate or blood pressure readings that change over time, Categorical survey answers like “yes/no” or “low/medium/high” responses in questionnaires, and Textual or multimedia content like written feedback, photos, or videos. As these data are heavily different from each other, it becomes difficult to process and analyze properly. Current methods of analysis like statical examination, regression time series analysis, and clustering methods for analyzing physiological data cannot handle heterogeneous datasets. So, this study plans to use advanced data science methods and tools to solve these issues so that entire analysis, personalize recommendation and predictive modeling for personalize wellbeing can be performed based on yoga practices.

Problem Statement:

The popular way for reducing stress and improving focus is yoga and meditation, even though these practices are popular but there are only limited scientific proof connecting them real world mental wellness. Many existing research studies depends on self-reports such as personal experiences and small samples like gathering data from few number of participants which causes, hard time to clearly understand how everyday habits such as how much time people spend on screens, how their work routines effect on their overall psychological health and emotional well-being. This research study applies data science analyses large wellbeing samples dataset. It merges machine learning to present effect of how lifestyle decision affects stress levels. By converting traditional yoga practices into measurable data and knowledge, it helps in designing personalize wellness plan which means plans made especially for each person specific needs.

It also includes holistic health and learning goals as specified in Indians national education policy, NEP 2020, as it encourages overall physical, mental and spiritual well-being.

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Review of Literature:

The yoga was started in Indian thousands of years ago which is now accepted all over the world because of it benefit in physical, emotional, and mental health it helps in improving health, calmness and emotional balance. The word yoga comes from the Sanskrit word "yuj" which means "to unite", as yoga helps in uniting mind, body, and spirit. Most scientific studies show that doing yoga helps reduce stress, lowering anxiety and helps overcome depression. It also helps boost overall focus and improve emotional balance. The 2017 research conducted by Sharma and Haider showed that meditation help in enhancing the concentration and emotional control by increasing activity in prefrontal cortex, which is a part of brain responsible for focus, decision-making, and emotional regulation. In short yoga helps in thinking clearly and emotional balance.

The research conducted by the Indian Council of Medical Research (ICMR) shows that one who practices yoga and meditation on daily basis have comparatively low cortisol levels and better self-control they can handle challenges and task's calmly and can think more clearly to make good decision than others. The research finding ensures that yoga is not only for physical wellness, but it also helps in improvement of mental health and emotional balance and stress management. In today time where students and professionals are in so much stress, pressure, and mentally exhausted yoga becomes to very important for their both mental and physical health.

Wellness and academic performance :

As the national education policy (NEP) 2020 aims to creating a education system which is complete and balance which does only focuses on academic's but also promote emotional, physical and intellectual wellbeing. The policy tells to include yoga, meditation, and physical activities in classes so that students can be fit mentally and physically both for overall development of students. Even after this vision there is not enough scientific proofs that links yoga or mindfulness helps in improving grades, learning and mental health. The most currently available research depends on qualitative data like personal feedback, opinions, or general observations, rather than quantitative or scientific approaches like statistical analysis, machine learning, data analysis, and experimentation. There is a clear need to apply data science or analytical methods to clearly understand the benefit of yoga and meditation to student mental health. This suggests a way for implementation of scientific fact-based policy.

Yoga Analysis: Merging Tradition and Data Science :

The "Yoga Analytics" is a new field that combines traditional yoga practices with modern-day technology like data science to generate data driven insights which will help in generating personalised wellness programs for individuals. It's basically about merging ancient wisdom with modern technology to provide scientific facts. In this yoga analysis process the researchers must collect the data like how much people do yoga, how long they meditate, how much is their screen time and what is their lifestyle after collecting this data they must analyses data to find pattens and relation among these lifestyle, habits and mental health results like focus, stress and happiness. New research shows how important and beneficial it is use data science tools for studying health and wellness as it provides the conclusion based on scientific evidence and measurable data rather than just opinions. A study by Gupta et al in 2021 found that one who do yoga regularly feels less stressed in terms as frequency of yoga increases the stress levels decrease by using regression analysis. Similar research study of Kumar and singh (2020) found that doing meditation helps students to stay calm, focused and experience less exhaustion and mental fatigue. This study result suggested that we can use analytic to convert subjective experience data into measurable insights which will help in developing personalized fitness program and examine emotional heath more effectively.

Empirical Evidence Linking Yoga, Meditation, and Stress Reduction:

Much scientifically research has proven that yoga and meditation help in building a clear, focused and sharp mind and it also helps in emotional stability. This research confirms that yoga and meditation make the mind

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clear, calm, and focused. A meta-analysis by Cramer et al shows that the students who have practiced yoga and meditation have more focus, motivation, and calmness in academic performance. Apart from yoga practice our daily life habit like screen time and workload also have deep influence on our mental health, activity like spending high time screen can cause increase in mental fatigue and stress, so practicing mindfulness helps in reducing this effect and provide relaxation to mind. The problem which occurs here is that many studies use small samples of qualitative data which have limited scope. The statistical and machine learning tools are still in development stages for conducting quantitative, meta-analysis, that create a research gap which give an opportunity for this study to fill this gap by using data science to analyse and find the correlation between yoga, meditation and lifestyle on mental wellness.

Role of Machine Learning in Wellness Prediction:

Machine learning provides a large number of high-level advanced tools set and computer algorithms which are used to create models that can analyse meta data sets to find patterns and make prediction of stress-level based behavioral and lifestyle data. There are different types of algorithms which can be used for model building like random forests, support vector machine, Logistic Regression, Decision Trees, and these algorithms shown the valid outcomes in making health related predictions. As example the study conducted by Sano and Prichard in 2016 has found that the machine learning methods or algorithm have near 85% of accuracy in making prediction about stress which means it can detect weather the person is stressed or not by using and analyzing physiological data like heart rate and skin temperature and behavioral data like activity levels, lifestyle and sleep cycle etc. This study results show that machine learning can be very effective in analysis of yoga and mental wellness data for making prediction.

The current study takes inspiration and reference of earlier studies to apply machine learning approach's on yoga and mental wellness data to analyze and find how the daily different lifestyle factor can affect stress levels. The study not only provide scientific proof of what traditional wellness systems like yoga is the most ancient method of reducing stress but it also aligns with NEP 2020, which encourages education that develops the mind, body, and spirit together not just academics.

Research Gaps and Need for Yoga Analysis :

Even after having many studies supporting the yoga and meditation's overall health benefits we still have many gaps remaining. Lack of quantitative validation: most of the available studies uses qualitative data al like opinions and self-reporting very less Studies have used quantitative method like statistics, data science, or machine learning for getting measurable insights to identify the impact of yoga and meditation on mental wellbeing. Lack of connection to NEP 2020: In currently available studies very few studies follow the NEP holistic learning goals. Limited temporal perspective: most of studies only collect the data one time and perform the researcher on it and provide result but this are invalid for feather long-term studies for deeply understanding impact of yoga and meditation impact on mental health researchers should conduct longitudinal study that track changes and improvements over the period of time.

To addressing these gaps, we will have to develop an interdisciplinary approach that can combine discipliners Education for applying finding for students at school and colleges, phycological for understanding human behavior's and emotion for stress analysis and Data science to measure and analyse patterns scientifically

Research Methodology:

This study uses a combination of two types of research methods which are statistical analysis and machine learning methods.

Statistical method: it will help summaries data, find averages, correlations, and relationships in large data sets.

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Machine Learning: It will help identify hidden patterns and make predictions from large data sets.

This mixed method helps us in handling various types of data like numerical, categorical, and text-based in our studies so we can get accurate prediction. Based on that prediction, we can provide custom programs for stress management suggestions.

Research Design:

Quantitative and Qualitative both research approach is used in this study the data is collected from surveys.

The data collection contains:

Demographics: it contains data such as id, age, gender, occupation.

Lifestyle factors: it contains data about daily habits like how much participant do yoga or meditation, their work hours, screen time, sleep duration, and exercise routines.

Wellness measures: it contains Participants self-stress levels, focus, mental clarity, and opinion about meditation's effectiveness.

This research main goal is correlation between daily habit and its impact on overall wellbeing and it also aim to build predictive models for stress and wellness estimation.

Data Collection:

Data was collected through an online survey form which was distributed to large number of individual participants which were in yoga and meditation club. The participants provide self-reports meaning information about them self like how mush yoga or meditation they do, how it feels, does it help them reduce stress and information about their lifestyle and habits. The good steps were taken while collecting data to ensure protection of participants' personal data and maintain confidentiality.

Data Preprocessing:

Before starting the analysis, the data undergoes through data preprocessing in which data had of be cleaned and prepared for generating accurate and reliable results. The data preprocessing includes steps:

Handling missing values: In this step, we fill missing responses by using mean or mode substitution for continuous or categorical variables. This helps in preventing data loss and keeps the dataset consistent.

Encoding Categorical Variables: In this step we convert text-based categorical data into numerical data as we are using machine learning algorithms for finding patterns and making prediction and this ML algorithms work with only numbers

Normalization: it helps in minimizing the difference between two variables for eliminating bias in model training, so in this step to ensure fairness in analysis, continues variables like screen time and work hours were adjusted to a similar scale so that large number does not dominate the smaller one and result are unbiased.

Outlier Detection: Unusually high or low values that could distort the analysis were identified using statistical techniques such as z-scores, and then reviewed or corrected.

Exploratory Data Analysis (EDA):

It is a process performs for understanding the entire structure of data and to recognize hidden pattern and trends. It is performed before using machine learning models. It includes,

Descriptive Analysis: It was used for basic calculation like for calculating average, mean, median, frequency distribution like how often each value appears, standard deviation of variables. It helped in summarizing key points like stress level screen time and habits, etc.

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Correlation Analysis: This was used for analyzing relationships between categorical data to find link between daily lifestyle habit, yoga practices, and workload and stress levels. This shows us how our daily habit and lifestyle are related with our wellness and stress.

Visualization: We used visualization for simplifying complex hard to explain outcomes into easy to understand visual presentation, by using graphs such as box plots histograms, scatter plots, etc.

Statistical Analysis:

For finding weather lifestyle habits and yoga meditation practices do really have impact on stress for that study use different Statistical Analysis like:

Hypothesis Testing: For testing different hypothetical theories, we have used ANOVA and t-test that compares mean of stress level among people who do yoga and meditation daily and those who do not do yoga and meditation at all. This help us to find that is the stress level frequency between people is different as they do yoga or not.

Regression Analysis: This we have use statistical analysis technique for measuring effect of factors like workload screen time and meditation have on stress levels, it is also tells weather this factor increase or decrease stress.

Machine Learning Approach:

When the statistical analysis is completed we use machine learning approaches for predicting the stress levels according to people's lifestyle habit data. This prediction helps us to find out which lifestyle habits most affects in identifying stress levels and how accurate this stress level can be predicted using data based on lifestyle factors:

Data Split: We have split the data set into two parts 70 percent for training data and 30 percent for testing data to enhance overall performance of machine learning model.

Feature Selection: Feature selection is a process of selecting only necessary features to get desired outcomes to avoid overfitting features. The main variable for prediction includes yoga frequency, opinion on meditation effects, and screen time workload. These features were selected according to their theoretical and logical relevance to stress and wellbeing.

In this study, we have used three types of machine learning models for stress level predictions.

Logistic Regression: It predicts probability that is person has a high stress level or not according to data on their lifestyle yoga and meditation.

Random Forest: By using this model, we can combine multiple small decision trees and ensemble their result to get stable and accurate outcomes.

Support Vector Machine: It is used for classification of high low stress groups by finding best partition between two categories into multiple dimension space.

Ethical Considerations:

To for making research ethical we must take responsible steps like:

We should not forcefully tell people to volunteer in the survey. We should clearly state the purpose of research to all participants and how we will use information given by them and for what. We should always handle people's personal details like name, phone number, and email address in a protected manner to ensure privacy. We should always store the collected data in a highly secure manner and only use it for research necessity to make sure there is no misuse of data. By following these steps, we can claim that research follows every ethical consideration.

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Results / Findings

Descriptive Statistical Analysis:

The results of descriptive statistical analysis analyzed factors like “age” and “how many hours you have to work and what is total usage of laptop and phone. To show that the most number of responses are from participants of age around 19 to 20 year old likely from student, and the minimum age is 16 and maximum 32. The small standard deviation is 2.2 show that age values are eighthly clustered around.it also stated that only 14 percent practice yoga daily among all participant of 47 and 53 percent do it sometimes and almost 85% say that yoga and meditation help in manage stress and is necessary

Correlations Analysis:

The correlation analysis used two main variables var1=age and var2=number of hours you have to work and use laptops and phones in daily life. It resulted in showing the r=0.25, but this not strong correlation. The result stated that as age increases the use of laptop and phone increases. Which older participants mainly spend more time on laptops and phones. Overall our dataset is good for modeling as there no multicollinearity issues were detected.

Table:1 shows the performance measures for different models.

Model	Accuracy	Precision	Recall	F1 score
Random Forest	0.97	0.97	0.97	0.97
Logistic Regression.	0.98	0.98	0.98	0.98
Support vector machine	0.96	0.96	0.96	0.96

The models were reliable and accurate, this study used 5-fold cross validation meaning data was separated into 5 parts and trained and tested for 5 times to get stable result. The models generate results with the accuracy between 0.96 and 0.98, and small standard deviation 0.006 that confirms predictions were steady across all runs. The logistic regression model performed best in all other models, random forest showed that recusancy of yoga, meditation, screen time, workload has most impact on stress levels.

Conclusion:

The study introduce a structure that implies statistical approaches and machine learning methods to analyze the connection among yoga, meditation, lifestyle habits and its impact on stress levels. By applying wellness dataset collected from survey, for statistical analysis for analyzing and demonstrating correlations between wellness, including the frequency of yoga. The study found that those who regular practice yoga and meditation have more stress-free life, calm nature and clear mind. The statistical analysis showed and confirmed the relationship between lifestyle habit and stress whereas machine learning helped us to categories people in high or low stress level categories based on their lifestyle habit data. The model performed very well and had good accuracy means it can predict and classify stress level of participants.

Overall the study result stated that the implementation of modern technology like data science into the traditional practices like yoga and meditation can help in creating more personalized programs to manage stress levels.it also helped in find that how much our lifestyle and habit has impact on our mental health and

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overall wellness. By using modern approach of yoga analysis in this study we created data driven scientific proof for backing our results. Our study also stated that not everyone use yoga and meditation for managing stress and we need different approaches to manage stress for everyone. Our study perfectly align with NEP 2020 objective of holistic and learner focused wellness education policy.

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