



Gavesana

Journal of Management

Investing for a Sustainable Future: An Analysis
of Green Stocks and Portfolio Performance

Vanjari Sadhan Kumar

Metaverse: A Virtual Battleground for Brands

Kshemaindra Acharya Phaniharam

Evaluating sentiment analysis of online tweets pertaining
to the COVID-19 outbreak through the use of deep learning
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Gender Diversity and Women Empowerment for Sustainable
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A Conceptual Paper On Financial Literacy

Namreen Asif V. A

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The Gavesana Journal of Management is a bi-annual refereed journal of the Vignana Jyothi Institute of Management. Its objective is to disseminate knowledge of contemporary issues related to management and development. The journal seeks to serve as a platform for intellectuals to share the rapid strides made in contemporary research. The Research Journal has been registered with the Registrar of Newspapers for India (RNI) vide No. 108534/2010 dated 1/3/2011.

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Editorial

I am delighted to present to you the twentieth issue of our journal, "Gavesana - The Journal of Management."

In this issue, we have made an effort to incorporate articles from diverse areas of management while maintaining high standards. This matter exhibits a balanced combination of both theoretical and practical research papers.

The issue would provide additional assistance to the teaching profession in staying informed about the most recent advancements in their respective fields.

There is unanimous agreement that teachers in B schools must consistently engage in high-value research to benefit all stakeholders in B schools. It is widely agreed that teachers in B schools must engage in both high-quality teaching and rigorous research. The journal is an initiative undertaken by the institute to promote high-quality research among the members of the teaching community in B schools. This endeavour aims to construct a repository of articles that are exceptionally enlightening, encompassing diverse aspects of management domains. The journal is anticipated to facilitate the spread of knowledge pertaining to the most recent advancements in different domains of management education. Furthermore, we will strive to incorporate articles that provide valuable insights into pressing matters. An illustrative instance is the matter of sustainability in each and every field, which has captivated the focus of nations worldwide. Researchers consider topics like 'carbon credit, environmental and ecological balance, saving the planet to be highly significant. Given the extensive research in this field, it is imperative to comprehend the complexities of the subject. What is India's position on this matter? We are willing to incorporate articles that contain rigorous research in this field. We plan to address several important subjects in our future issues, including inflation, monetary and fiscal policy, HR practices, international finance, and international marketing, among others. Therefore, we will make diligent endeavours to establish this journal as a platform for disseminating the research conducted by the intellectual community of educational institutions focused on management.

Dr. D Ravinath
Chief Editor,
Gavesana Journal of Management

"Investing for a Sustainable Future: An Analysis of Green Stocks and Portfolio Performance"

Vanjari Sadhan Kumar*

Abstract:

This study explores the financial performance of S&P BSE Sustainability Indices, comparing them to S&P BSE Sensex, and analyzing the financial performance of green versus non-green portfolios. The research uses a mixed-methods approach and finds that green investments perform comparably or better than traditional investments, with lower volatility and greater resilience. The study also shows that sustainable investing strategies, such as ESG integration and impact investing, can further enhance both financial and non-financial outcomes of green investing. The implications of these results are significant for retail investors, fund managers, policymakers, and other stakeholders who are committed to promoting sustainability and financial stability.

Keywords: Portfolio performance evaluation tools, Sustainability, ESG (Environmental, Social, Corporate governance), Green portfolio, SRI (Socially Responsible Investment).

Introduction:

In recent years, investors and fund managers have sought to include environmental, social, and governance (ESG) considerations in their investment decisions. Green equities and portfolios, which prioritize investments in companies that meet specific sustainability criteria, have become a popular means of investing sustainably.

This study can be divided into two sections where first part of the study focuses on the evaluation using statistical and financial tools and comparing of the performance of green Indices, using the sustainability indices like BSE 100 ESG, BSE Carbonex, and BSE Greenex indices and market indices as standard for sustainable investing.

These green indices track the performance of companies that demonstrate strong ESG practices, low carbon emissions, and investments in green technologies and infrastructure.

As of March 31, 2022, the BSE 100 ESG, BSE Carbonex, and BSE Greenex indices outperformed the BSE Sensex, a benchmark index for the Indian stock market.

Stock market Indices used for the study:

S&P BSE Carbonex: The S&P BSE CARBONEX index series is a group of indices consists of 100 companies started in 2012 and developed by S&P Dow Jones Indices and BSE (formerly known as Bombay Stock Exchange) in collaboration with the Indian Ministry of Environment, Forests, and Climate Change. The indices are introduced to measure the performance of those companies in India that have taken steps to reduce their carbon footprint and are committed to sustainable business practices and based on their inclusion to mitigate the risk which is arising from change in climatic conditions.

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Annual reviews of the S&P BSE Carbonex index series occur in March and September. The indexes are calculated using a free-float market capitalization-weighted methodology, which implies that the weights of the index members are determined by their market capitalization after being corrected for the quantity of freely traded shares.

Investors interested in ESG investing in India can use the S&P BSE CARBONEX index series as a benchmark for evaluating the performance of companies that are committed to sustainable business practices and reducing their carbon footprint.

BSE Greenex: BSE Greenex is another index series developed by BSE (Bombay Stock Exchange) to measure the performance of companies that are committed to sustainable business practices and environmental stewardship in India. The BSE Greenex was launched on February 22, 2012, and it is India's first environmentally focused stock index.

The BSE Greenex consists of the top 25 companies that meet specific ESG (environmental, social, and governance) criteria. These standards are based on data collected in publicly accessible papers such as annual reports, sustainability reports, and other open records. Energy utilisation, greenhouse gas emissions, water use, waste production, and biodiversity are among the BSE Greenex selection criteria.

And the second part focuses on comparing the portfolio sample of green stocks and non-green stocks and evaluating their average return and risk factors and interpreting the results thereon.

It is essential to bear in mind that prior performance does not guarantee future outcomes, and that investing in the stock market always involves risks. Nonetheless, these figures offer some proof that investing in green stocks mostly in primary market which helps to raise capital for sustainable activities and green portfolios may offer a practical approach for investors looking to support sustainability and generate profits.

BSE 100 ESG: This index launched in 2017, comprises of 54 constituents as of 31 March 2023. This index is designed to measure securities that meet the sustainability investing parameters under the umbrella of Environmental, Social and Corporate governance.

BSE Sensex: This is market index of S&P BSE launched in 1986 and comprises of 30 companies which are periodically adjusted by the recommendations of the index committee.

Objective of the study:

- To assess the financial performance of sustainability indices in comparison to SENSEX.
- To determine which index shows better performance in terms of sustainable indices.
- To compare the financial results of portfolios that are sustainable and those that are not.
- To evaluate whether there is any difference in cost of procuring capital between green and non-green stocks.

Review of Literature:

"Investing in green equities and sustainable portfolios has grown in popularity over the past few years as investors attempt to align their financial interests with their environmental values. The SRI concept emphasizes environmental, social, and corporate governance (ESG) issues.

However, research into the efficacy and effects of such investments is still in its infancy. This review of the literature aims to provide a thorough examination of the current studies on sustainable portfolio management and green stocks. This review will contribute to the ongoing conversation about the role of sustainable investment in promoting a more sustainable future by synthesizing the main findings and identifying the research gaps. As per Indian authors and context there are several studies that discuss about the sustainable Investment some of them are as follow:

Numerous researchers conducted studies on the sustainability of financial investments, and the results indicate that green stocks and portfolios exhibit lower risk relatively, despite having more systematic risk, against general stocks. In addition, these portfolios generated significantly greater returns during and after crises on the Indian stock market. The ESG and greenex indexes showed positive net selectivity returns throughout all sub-periods, especially during the crisis. Considering these results, sustainability must be given top priority in financial ventures.

The GREENEX and ESG Indices in the Indian stock market have shown to outperform the nifty even in terms of returns of net selectivity. This suggests that investors who prioritize social responsibility in their investments and choose to invest in companies which are socially responsible are rewarded with greater returns compared to those who don't. In a study conducted by Tripathi and Bhandari (2012 & 2015), it was found that during the crisis period, green blue-chip stocks gave more returns than the market/benchmark returns. They also concluded that green portfolio performed better than non-green portfolio and can be chosen as safer option for risk averse investors during economic slowdown and financial crisis.

Preethi Sharma *et al.* (2020) conducted a study on the performance and risk of two Indices which are socially responsible, GREENEX and CARBONEX, as compared to BSE SENSEX from 2012-2020. They found that SENSEX generated the highest returns among the three indices. However, CARBONEX outperformed GREENEX in terms of performance. When it came to volatility, GREENEX had the highest level. Based on their findings, the study concludes that SRI is still in its initial stage in India. They recommend the need for greater awareness among investors and for companies in India to take more initiatives in addressing governance and environmental concerns.

Jian *et al.* (2021) examined the performance of 100 ESG Index and 100 Enhanced ESG Index in nifty against the index of NSE over a 10-year period using daily index data. They applied statistical tools such as descriptive statistics and standard deviation to analyze the data and interpreted that investors who are risk lovers can gain more by investing in ESG 100 index, whereas those who are risk-averse can invest in the conventional index. However, the study has a limitation as it was unable to draw any conclusion using the Garch model to measure volatility.

Bhanu Murthy *et al.* (2014) conducted an analysis to determine whether socially responsible companies exhibit better price discovery and returns than general companies. The findings showed that at the time after the crisis periods, companies which are socially responsible demonstrated better price discovery and returns compared to general companies.

Vanita Tripathi *et al.* (2020) evaluated the performance of socially responsible indices in BRICS countries to their regular market indexes using adjusted risk measures and conditional risk indicators. While Brazil consistently rates among the top performers, India emerges as the best performer during times of crisis, according to their findings. Furthermore, the study concludes that the SRI indices of BRICS countries outperformed conventional market indices in terms of risk-return measures across multiple markets. Moreover, India's flourishing stock market, which has an estimated 59.1 million retail investors, has witnessed a doubling of investments in strategies which are sustainable to \$30 billion in just five years, because of the inclusion of ESG regulations and reporting. In addition, according to NGOBOX (2018), ESG disclosures in India have doubled from 2010 to 2017.

The emphasis on higher and broader independence, transparency, and gender representation in the Companies Act legislation, which aims to improve corporate governance, have all contributed to an increase in the adoption of socially responsible business practises. Environmental policies and regulations aimed at reducing harmful emissions, laws requiring companies to allocate an average of 2% of their previous three years' profits to specific social activities, and Another Indian investigation shows that the MPT has received subpar results with SRI devices. These studies show that SRI investments beat traditional benchmarks, producing higher excess returns with reduced risk. Tripathi and Bhandari (2015); Srinivasan (2014).

Praveen & Firoz (2022) investigated the relation between ESG disclosures and Corporate Financial Performance in India. The researchers used ROCE and ROA as measures of CFP and analyzed data from the S&P BSE top 100 Indian companies. The findings indicated a positive correlation between CFP and individual ESG factor scores, where social disclosures are given exception. Improved disclosures of ESG helped companies enhance their CFP, build a positive reputation, and foster ethical practices. The study also disclosed a significant and also positive relationship between organizations' leverage and growth with CFP in all eight regression models.

Tyagi & Singh (2020) based on a brief overview of the paper; a potential research gap could be the lack of focus on the specific impact of ESG practices on the performance of green stocks in India. While the study analyzes the relationship between financial performance and practices of ESG, it does not distinguish between companies that are considered "green" or environmentally sustainable and those that are not. Therefore, further analysis could focus specifically on the performance of green stocks and how their ESG practices contribute to their financial success in the Indian market.

(Jadiyappa & Raveesh - 2022) analysis indicated that there is correlation which is positive between energy efficiency and in the firm's value in the stock market with regards to capital procurement and structure. The authors define this higher valuation to the lower risk of stock returns, which is measured by the deviation of daily stock returns. Additionally, investing in energy-efficient firms is less dependent on internal cash flows, implying that less green companies may have more difficulty procuring capital from external sources and must depend on the internal sources of capital for the investments.

Also, there are several studies by foreign authors and in the context of foreign stock markets, below are some of the referred studies:

Saeed & Hassan (2013), in their analyzed the indices of sharia which are stock market indices like ethical investment category that track the performance of companies that comply with Islamic Sharia law. These indices are designed to meet the investment needs of Muslim investors who wish to invest in companies that follow Sharia principles and avoid investing in companies that involve in prohibited activities, like gambling, alcohol, weapons, tobacco and interest-based financial services and neither found that systematic risk and performance of portfolios that underwent Sharia or sustainability screening process were not negatively impacted when compared to their conventional counterparts without any restrictions.

Yacine Belghitar *et al.* (2014), In the study, the authors compared the performance of SRI and traditional investments based on empirical mean-variance evidence. The study found no significant difference between the two in terms of mean and variance but suggested that socially responsible investing comes at a higher cost in the form of higher moments of return distributions. Additionally, the study showed that indices composed of conventional firms outperformed those comprised firm which are socially responsible in trademarked indices and indices matched with the companies in the SRI indices. As a result, investors who try to avoid risk may want to decrease their holdings of socially responsible firms and increase their investments in conventional ones to increase their expected utility.

According to Camilleri (2020), business owners and people are increasingly taking their own personal values into consideration when making choices about their financial investments. Epstein (2018), Humphrey *et al.* (2016), Sparkes and Cowton (2004), and Schueth (2003) have all seen this pattern, as have other academics such as Fritz and von Schnurbein (2019), Sparkes (2017), and Schueth (2003). According to academics like Majoch *et al.* (2017), Mair and Milligan (2012), and Guay *et al.* (2004), an increasing number of people are making the decision to invest their money in organisations that are socially responsible and involve their stakeholders.

Benson *et al.* (2006) The study discovered that the skill of fund managers in picking stocks does not differ significantly between socially responsible and conventional stocks. Additionally, the research indicated that the returns generated by socially responsible investment funds are derived from exposure in different industries as compared to traditional funds, implying that SRI managers maintain distinct portfolio positions.

Hume *et al.* (2008) The study revealed that socially responsible companies had better return and performance before 2000, indicating the need for more investment in such companies. However, in recent years, the portfolio of "vice stocks" showed the performance which is best in adjusted-risk basis, suggesting that the benefits of being socially irresponsible were underestimated by investors. The authors of King and Lenox (2001) also found that companies which are financially and environmentally strong performed better than traditional firms.

Shernaz and Ruzbeh (2019) The purpose of this research was to determine whether sustainable and responsible investments (SRI) had a better return than investing in global benchmark indexes throughout a variety of time periods. According to the data, SRI portfolios had reduced risk in developing nations and underperformed their benchmark index. However, SRI portfolios did not outperform their benchmark index. Within the developed countries, the SRI portfolio of the United States exceeded the benchmark index, while the SRI portfolios of the United Kingdom and Australia fared similarly. In the case of India, the SRI IND-Stock portfolio

was compared to Standard & Poor's Bombay Stock Exchange-Sensex (BSE SENSEX) as a benchmark. The findings demonstrated that the SRI portfolios of India underperformed the wider stock market over the medium term (five years). This was the case regardless of whatever index was used as the comparison. Within the developed countries, the SRI portfolio of the United States exceeded the benchmark index, while the SRI portfolios of the United Kingdom and Australia fared similarly. In the case of India, the SRI IND-Stock portfolio was evaluated in comparison to S&P's Bombay Stock Exchange-Sensex (BSE SENSEX) as a benchmark. The findings showed that the SRI portfolios of India did not do as well over the medium term (five years) in comparison to the bigger stock market.

Chang *et al.* (2010) The study examined the characteristics, risk measures, and performance (SRFs), funds which are socially responsible considerably mutual fund in U.S industry over the past one and half decade. The analysis showed that SRFs have low expense, annual turnover, cost of tax ratios and risks compared to traditional funds. However, the study found that SRFs also have lower returns and less favorable reward-to-risk performance based on two risk-adjusted return measures. Furthermore, the study revealed that domestic stock SRFs failed to generate competitive returns when compared to conventional funds in the same categories.

Malladi *et al.* (2021) The MSCI KLD 400 Index was used to compare the performance of SRI to traditional assets. The study revealed a significant disparity between SRI and non-SRI equities in terms of liquidity and volatility. Moreover, the findings revealed that SRI equities outperform non-SRI stocks during economic downturns. Despite this, there appears to be a general preference among investors for investing in equities that are not socially responsible. During crises, the study indicates that investors who invest in long-term may be prepared to forego short-term profits to decrease their overall risk exposure.

In relation to the capital aspect Camilleri (2020) and according to Pooja Mehta et al. (2019), there has been an increase in the investment of financial capital providers in sustainable and impact investments. They reported that SRI assets in the USA expanded to \$12.0 trillion in 2018, which is a 38% increase from \$8.7 trillion in 2016 (SIF, 2018). In line with this, Schueth (2003) identifies couple of primary motivations for SRI investors: investing in those assets which align with 1. personal values and priorities and 2. quality. While prior research has demonstrated that SRI portfolios underperform the benchmark index especially in developing nations, they also carry a reduced level of risk. Fernando et al. (2009) investigated the liquidity of SRI investments in green enterprises and discovered that greener companies have greater liquidity on the stock market.

Research Hypothesis: Null Hypothesis statements.

H₁: There is no notable/significant difference between the Average returns of market index and sustainability indices chosen in the study.

H₂: There is no meaningful difference in risk of Sensex and sustainability indices.

H₃: There is no substantial difference between risk-adjusted return over risk taken of Sensex and sustainability indices.

H₄: There is no substantial difference between risk-adjusted return over systematic risk of Sensex and sustainability indices.

H₅: There is no substantial difference between the 5-year returns of green portfolio and non-green portfolio.

H₆: ESG scores do not impact the returns of stocks.

H₇: There is no substantial difference in the procurement cost/ cost of capital between the green portfolio and non-green portfolio.

H₈: There is no substantial difference between risk/standard deviation of green portfolio and non-green portfolio.

Research Gap:

After examining the existing literature, it is evident that there is a significant research gap in analyzing and comparing all three sustainability indices, namely S&P BSE 100 ESG, S&P BSE Carbonex, and S&P BSE Greenex, with the market index, which is S&P BSE Sensex, and their financial performance. Addressing this research gap is crucial as it would provide a comprehensive understanding of the relationship between sustainable investing and financial performance in the Indian market. A comparison of the performance of all three sustainability indices with the market index could offer investors valuable insights into which sustainability metrics are most crucial for financial performance, enabling them to make more informed investment decisions. However, it is essential to acknowledge that this research may have limitations due to the limited availability of data and the dynamic nature of the market, which could impact the results.

Further, to obtain an understanding of the sustainability and benefit of inclusion of ESG components in portfolio, this study focuses to fill the gap by comparing the green portfolio with non-green portfolio so as to derive the conclusion whether there is any significant difference between the returns, risk, cost of capital, ESG scores of the stocks in portfolios where one can interpret the results and design and manage the portfolio accordingly.

Therefore, further research is needed to fill this research gap and provide more comprehensive insights relating to the impact of ESG components and financial performance.

Research Methodology:

The study relies on secondary data and information regarding stock prices.

The statistical and financial tools used in the Analysis are:

1. AVERAGE ANNUAL RETURN

The formula for calculating the average annual return is:

- **Average Annual Return = (Average return of Daily Indices return)/ Number of Trading days) x 100%**

2. TOTAL RISK (Standard Deviation)

The annual standard deviation (SD) of an index is a measure of the returns of the variability of the index over a period of one year. It is a commonly used risk measure in finance and is used to assess the level of risk dealt with an investment in the index.

- $s = \sqrt{[\sum (P_i - P_m)^2 / (N-1)]}$

where:

P_i is the price of the stock for the i -th day.

P_m is the average stock price over N days.

N is the total number of days for which the stock prices are being analyzed

\sum is the summation operator, which means you add up all the values within the brackets $(P_i - P_m)^2$.

3. BETA (Systematic Risk Measurement)

Beta is the measurement of systematic risk, which is uncontrollable, it states the change in rate of return and direction of stock as per change in 1 unit of return of market.

- **Beta = Covariance of Market and Indices / Variance of Market**

4. SHARPE RATIO

It tells about the return after adjusting the risk and helps investors to evaluate an investment compared to its risk.

Formula:

- **Sharpe Ratio = $(R_p - R_f) / \sigma_p$**

where:

R_p = Expected return of Investment.

R_f = Risk-free return, usually taken as the yield on government bonds

σ_p = Investment's standard deviation

5. TREYNOR RATIO

It is the performance evaluation measure of a portfolio which considers both the portfolio's return and its level of systematic risk or beta. It was developed by Jack Treynor and is widely used in finance.

Formula:

- **Treynor Ratio = $(R_p - R_f) / \beta_p$**

where:

R_p = the portfolio's return

R_f = Risk-free return, usually taken as the yield on government bonds

β_p = the portfolio's beta, which gauges its systematic risk or vulnerability to market fluctuations

6. JENSEN ALPHA

It is the performance metric that finds the extra return earned by the stock compared to its returns expected based on beta. It was developed by Michael Jensen and is widely used in finance.

The formula for Jensen's Alpha is as follows:

- **Jensen's Alpha = $R_p - [R_f + \beta_p \times (R_m - R_f)]$**

where:

R_p = the portfolio's return.

R_f = Risk-free rate of return, usually taken as the yield on government bonds.

β_p = beta, measurement of systematic risk.

R_m = market or benchmark return.

7. INFORMATION RATIO

The Information Ratio is a risk-adjusted measure that helps to calculate the portfolio investment return compared to its benchmark, after adjusting for the portfolio's tracking error or active risk.

Formula:

- **Information Ratio = $(R_p - R_b) / TE$**

where:

R_p = Portfolio return.

R_b = benchmark return.

TE = the tracking error or difference between benchmark/standard return and portfolio return.

8. SORTINO RATIO

It measures the extra returns of portfolio compared to its downside standard deviation, as measured by the portfolio's semi-deviation or downside deviation.

Formula:

- **Sortino Ratio = $(R_p - R_m) / DS$**

where:

R_p = Portfolio return

R_m = market return/ risk-free return

DS = the downside deviation or semi-deviation of the portfolio, which measures the volatility of returns below the minimum acceptable return or target return.

9. M-SQUARE RATIO

The M-squared ratio (also known as the Modigliani-Modigliani or M2 ratio) is a metric that measures the extra return of a portfolio compared to its benchmark, after adjusting for the portfolio's exposure to a set of predetermined risk factors.

Formula:

- **M-squared Ratio = $(R_p - R_f) + \beta_p \times (R_m - R_f)$**

where:

R_p = Portfolio return

R_f = risk-free return

β_p = beta, measurement of systematic risk

R_m = benchmark/market return

10. KAPPA RATIO

It measures the consistency in generating excess returns above a risk-free rate, relative to its downside risk or drawdowns of a portfolio.

- **K. R = $(\text{Mean Return} - \text{Risk free Return}) / \text{Kappa value}$**
 - Kappa value = $(3^{\text{rd}} \text{ moment} - 4^{\text{th}} \text{ moment})$

11. OMEGA RATIO

It is the measure of risk-adjusted metric in finance to evaluate an investment's returns based on its downside risk. The Omega ratio was developed as an alternative to traditional measures like the Sharpe ratio and Sortino ratio, which only consider the volatility or downside deviation of returns.

The Omega ratio compares the cumulative distribution of positive returns to the cumulative distribution of negative returns. The ratio is calculated by dividing the probability-weighted average of positive returns by the probability-weighted average of negative returns.

(The assumed threshold value in this study is 40 percent, or 0.4, for calculating excess return)

Omega Ratio = (Probability of Positive Return / Probability of Negative Return) x (Upside Potential / Downside Potential)

12. WACC (Weighted Average cost of Capital):

It is the measure of the average rate/cost of acquiring capital that company acquired and where company's minimum required rate of earnings to satisfy the obligations.

$$\bullet \text{ WACC} = (E/V * R_e) + ((D/V * R_d) * (1 - T_c))$$

where:

E is market value of equity of company

D is the market value of debt of company

V is the (E + D) total value of company

R_e is the cost of equity.

R_d is the debt cost.

T_c is the corporate tax rate.

Analysis and Discussion:

Descriptive Statics of indices of daily data of 5 years (01-04-2018 to 31-03-2023)

Table 1.1

BSE SENSEX		BSE 100 ESG		BSE Carbonex		BSE Greenex	
Average	45939.03873	Average	223.2289122	Average	2254.289	Average	3462.588
S. E	284.8469154	S. E	1.543711543	S. E	14.05051	S. E	24.55663
Median	41323	Median	192.86	Median	1975.38	Median	2896.67
Mode	#N/A	Mode	168.41	Mode	1792.57	Mode	2787.4
Risk	922.0258428	Risk	54.38160766	Risk	494.969	Risk	865.0768
Variance	850131.6548	Variance	2957.359252	Variance	244994.3	Variance	748357.8
			-				
K	-1.50069995	K	1.563505597	K	-1.47487	K	-1.50526
Sk	0.229788463	Sk	0.248644108	Sk	0.244843	Sk	0.327468
Range	37302.95	Range	196.21	Range	1883.97	Range	3121.49
Min	25981.24	Min	119.63	Min	1229.1	Min	1833.76
Max	63284.19	Max	315.84	Max	3113.07	Max	4955.25
Total	57010347.06	Total	277027.08	Total	2797573	Total	4297072
No's	1241	No's	1241	No's	1241	No's	1241

Source: (Based on Author's calculations)

Sensex: The Kurtosis value of -1.50 suggests that the distribution of returns for Sensex is relatively flat compared to a normal distribution. The Skewness value of 0.23 indicates a slight positive skewness, which means that the returns are slightly more likely to be higher than the average returns.

ESG 100: The Kurtosis value of -1.56 suggests that the distribution of returns for ESG 100 is also relatively flat compared to a normal distribution. The Skewness value of 0.25 indicates a slight positive skewness, which means that the returns are slightly more likely to be higher than the average returns.

Carbonex: The Kurtosis value of -1.47 suggests that the distribution of returns for carbonex is again relatively flat compared to a normal distribution. The Skewness value of 0.24 indicates a slight positive skewness, which means that the returns are slightly more likely to be higher than the average returns.

Greenex: The Kurtosis value of -1.51 suggests that the distribution of returns for greenex is also relatively flat compared to a normal distribution. The Skewness value of 0.33 indicates a slightly higher positive skewness compared to the other indices, which means that the returns are more likely to be higher than the average returns.

Table 1.2 Average Annual Returns of Indices over past 5 years from FY 2018 – FY 2022

<u>ANNUALISED AVERAGE RETURN</u>					
Particulars	FY 2018	FY 2019	FY2020	FY2021	FY2022
BSE SEXSEX	15.88%	-23.35%	54.56%	18.07%	1.80%
BSE 100 ESG	14.05%	-26.59%	61.09%	19.78%	0.31%
BSE Carbonex	11.83%	-29.14%	57.90%	18.73%	0.84%
BSE Greenex	5.00%	-28.29%	62.57%	22.35%	-3.96%

Source: (Based on Author's calculations)

From the data when analyzed annually found that in FY 2018, all the three indices are underperformed compared to Sensex, and in year FY2019 all the indices shows negative annual rate of return which is due to macro factor mainly covid-19, and in FY2020 and FY2021 the results of the sustainability indices are positive and those are outperformed the market indices giving more returns than market, at last in FY2022 all the three green indices shows contrast results underperforming compared to market indices and market indices has higher average return.

The study when done by taking averages of average for 5-year period, BSE 100 ESG index is outperformed among all indices with average 5-year return of 13.728%.

Overall, the green indices show mixed performance as per different time period so clear conclusion cannot be drawn from above results where results are balanced with 2 years out performing and 2 years underperforming by considering the FY2019 as exception where covid-19 had effect on entire market but even in that year the negative returns of green indices are more compared to Sensex which is underperformance which proves green indices unable to provide security in critical scenarios.

STATISTICAL HYPOTHESIS SUMMARY: H₁

ANOVA Table:1.3

	df	Sq total	avg sq	f Value
Groups	4	2034.4	508.6	0.16
Error	20	80013.4	4000.7	
Total	24	82047.8		

P-value: 0.9644

The value of p is 0.9644, which is higher than the significance threshold of 0.05. This indicates that the null hypothesis is not rejected and there is no statistically significant difference between the average returns of the indices and the Sensex.

Therefore, there is no significant difference statistically between the average returns of Sensex and the selected sustainability indices.

Table 1.4

BETA (MEASUREMENT OF SYSTEMATIC RISK)

Particulars	FY 2018	FY 2019	FY2020	FY2021	FY2022
BSE 100 ESG	1.02	0.98	0.97	0.97	1.00
BSECarbonex	1.01	0.98	0.95	0.98	0.98
BSE Greenex	1.02	0.88	0.83	0.97	0.98

Source: (Based on Author's calculations)

All three sustainability indices (BSE 100 ESG, BSECarbonex, and BSE Greenex) have exhibited relatively low levels of systematic risk in the past five years.

The BSE 100 ESG index has shown consistent and moderate levels of systematic risk, with a beta coefficient ranging from 0.97 to 1.02, indicating that it tends to move in line with the overall market.

The BSECarbonex index has also exhibited relatively low levels of systematic risk, with a beta coefficient ranging from 0.95 to 1.01, indicating that it is also somewhat closely correlated with the overall market.

However, the BSE Greenex index has shown a relatively higher level of volatility, with a beta coefficient ranging from 0.83 to 1.02. This illustrates that the index is highly sensitive to market movements and could potentially result in greater gains or losses compared to the other two indices.

Numbers conclude that the low levels of systematic risk exhibited by all three indices suggest that they may be suitable for investors looking for stable and predictable returns, although the higher volatility of the BSE Greenex index may not be suitable for all investors.

Table 1.5

RISK OF INDICES (ANUALLY)

Particulars	FY 2018	FY 2019	FY2020	FY2021	FY2022
BSE SEXSEX	1.89%	4.29%	3.63%	2.41%	2.32%
BSE 100 ESG	2.00%	4.23%	3.55%	2.47%	2.35%
BSE Carbonex	1.96%	4.21%	3.46%	2.48%	2.32%
BSE Greenex	2.15%	3.93%	3.38%	2.69%	2.58%

Source: (Based on Author's calculations)

The standard deviation of the annual returns for BSE SEXSEX ranged from 1.89% to 4.29%, while for BSE 100 ESG, it ranged from 2.00% to 4.23%. Similarly, for BSECarbonex, it ranged from 1.96% to 4.21%, and for BSE Greenex, it ranged from 2.15% to 3.93%.

Based on the data provided, all four indices (BSE SEXSEX, BSE 100 ESG, BSECarbonex, and BSE Greenex) have exhibited relatively low levels of risk in the past five years, with their standard deviation of annual returns ranging from 1.89% to 4.29%.

The BSE Greenex index has exhibited a slightly higher level of risk compared to the other three indices, with a standard deviation of annual returns ranging from 2.15% to 3.93% over the past five years, and carbonex has less risk when analysed average 5-years risk value with 2.886%.

Table 1.6

Source of Variation	SS	df	MS	F	p-value
Between Groups	11.707	3	3.9023	3.6207	0.0202
Within Groups	34.119	16	2.1324		
Total	45.826	19			

STATISTICAL HYPOTHESIS SUMMARY: H₂

We can use level of significance 0.05.

Performing a one-way ANOVA on the given data, we get the following results:

F-statistic: 0.298

p-value: 0.82

As the p-value (0.824) exceeds the significance level (0.05), we cannot reject the null hypothesis. So, we conclude that there is no significant distinction between the risks associated with the Sensex and sustainability indices.

Table 1.7

SHARPE RATIO						
Particulars	FY 2018	FY 2019	FY2020	FY2021	FY2022	Average
BSE SEXSEX	4.319	-6.989	13.387	5.041	-2.384	2.675
BSE 100 ESG	3.175	-7.852	15.501	5.705	-2.986	2.709
BSE Carbonex	2.103	-8.494	14.998	5.336	-2.802	2.228
BSE Greenex	-1.256	-8.897	16.746	6.211	-4.387	1.683

Source: (Based on Author's calculation)

From the above data in table 1.6, it is observed that the Risk adjusted return over the risk when analysed yearly in FY2018, FY2020, FY2021 all indices giving positive returns except BSE greenex in FY2018 and in FY2019 and FY2022 risk adjusted returns are negative. When analyzed as per indices and the average of the index considered, BSE 100 ESG index is giving more risk adjusted returns with 5-year average of 2.709 and BSE Greenex is giving less risk adjusted returns with 1.682.

STATISTICAL HYPOTHESIS SUMMARY: Table 1.7 (H₃)

We will use a significance level of 0.05 for this test. The ANOVA table for the given data is as follows:

The p-value is lower than our level of significance, which means we reject the H₀ and state that statistically there is a difference between the risk-adjusted return over risk taken of Sensex and sustainability indices.

To state which groups are significantly different from among in the group, we can perform a post hoc test using the Tukey HSD test.

The conclusion of the Tukey HSD test are as follows: Table 1.8

Group 1	Group 2	Difference	Lower Bound	Upper Bound	p-value
BSE Carbonex	BSE 100 ESG	-0.4806	-1.8294	0.8683	0.4236
BSE Carbonex	BSE Greenex	0.5456	-0.8032	1.8944	0.3852
BSE Carbonex	BSE SEXSEX	1.4460	0.0972	2.7948	0.0391*
BSE 100 ESG	BSE Greenex	1.0263	-0.3225	2.3751	0.1338
BSE 100 ESG	BSE SEXSEX	1.9267	0.5779	3.2755	0.0007*
BSE Greenex	BSE SEXSEX	0.9004	-0.4484	2.2492	0.2535

A significant difference is observed between BSE Carbonex and BSE SEXSEX, and between BSE 100 ESG and BSE SEXSEX, as their p-values are less than our significance level.

Table 1.9

Treyndor Ratio						
Particulars	FY 2018	FY 2019	FY2020	FY2021	FY2022	Average
BSE 100 ESG	0.062195	-0.33865	0.569309	0.141788	-0.04558	0.077812
BSE Carbonex	0.040621	-0.36586	0.547981	0.130129	-0.06151	0.058272
BSE Greenex	-0.02649	-0.39666	0.68176	0.168462	-0.05635	0.074144

Source: (Based on Author's calculations)

The analysis of the above ratio of adjusted return as per systematic of BSE 100 ESG index is more among other indices with an average 5-year value of 0.0778 and Carbonex is giving lower among three indices with 5-year average of 0.0582.

STATISTICAL SYPOTHESIS SUMMARY: H₄

Assuming a level of significance (0.05), we can use the F-test to determine if we can reject the null hypothesis.

Calculating the F-statistic:

Total sum of squares (SST) = 0.1280

Between-groups sum of squares (SSG) = 0.0018

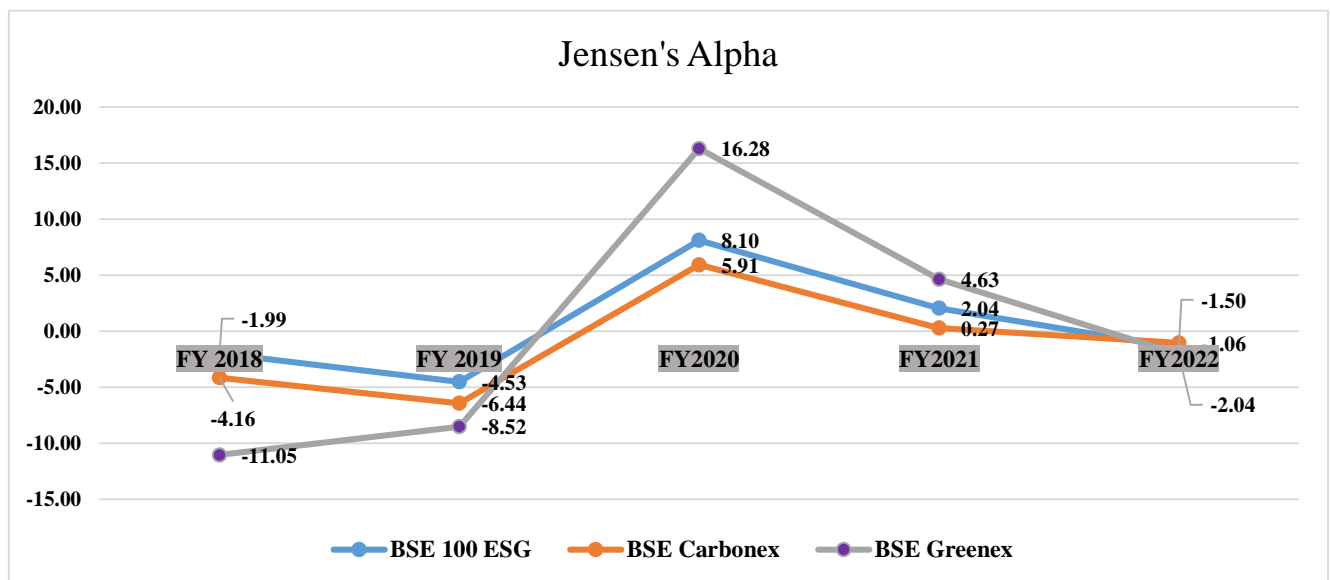
Within-groups sum of squares (SSW) = 0.1262

F-statistic = MSG / MSW = 0.087

Looking at the F-distribution table for degrees of freedom 2,12, the critical value of F with a level of significance of 0.05 is 3.89.

Since the F-statistic (0.0874) is lower than the critical value of F (3.89), the null hypothesis is not rejected. Consequently, there is no significant difference between the Treynor ratios of the three sustainability indices.

Diagram 2.1



Source: (Based on Author's calculations)

It can be observed that the BSE 100 ESG index had negative Jensen Alpha values in three out of 5 years which is same case for all three indices, but it is giving positive excess returns of a portfolio compared to its expected return based on its level of systematic risk or beta when 5-year average alpha value is considered which comes around 0.81, where other 2 indices stands to be negative average of 5-years.

For the BSE Carbonex index, the Jensen Alpha values were negative in three out of the five years, indicating underperformance. However, the index outperformed relative to its expected returns in the years 2020 and 2021.

In contrast, the BSE Greenex index had the lowest and highest levels of excess return in year of FY2018 and FY2020 respectively.

Overall, the Jensen Alpha values suggest that the BSE 100 ESG index performed well than the other couple of indices over the five-year period under consideration of average.

Table 1.10

KAPPA RATIO

Year	ESG 100	CARBONEX	GREENEX
FY2018	2.49%	-2.41%	20.16%
FY2019	79.07%	79.99%	81.12%
FY2020	429.92%	201.28%	92.16%
FY2021	-34.93%	-42.88%	-76.65%
FY2022	-27.92%	-21.62%	-65.93%
Average	89.73	42.87	10.17

Source: (Based on Author's calculations)

In FY2018, the Kappa Ratio of the ESG 100 index was positive, indicating that the index generated excess returns relative to its level of risk. In contrast, the Carbonex index had a negative Kappa Ratio, which suggests that the index underperformed relative to its expected returns, given its level of risk. The Greenex index had the highest Kappa Ratio, indicating that it gave the highest level of extra returns relative to its level of risk.

In FY2019, all three indices had positive Kappa Ratios, with the Greenex index having the highest Kappa Ratio, indicating that it gave the highest level of extra returns relative to its level of risk. The ESG 100 and Carbonex indices also had positive Kappa Ratios, but they were lower than the Kappa Ratio for the Greenex index.

In FY2020, all three indices had significantly positive Kappa Ratios, with the ESG 100 index having the highest Kappa Ratio, indicating that it gave the highest level of extra returns relative to its level of risk. The Carbonex and Greenex indices also had positive Kappa Ratios, but they were lower than the Kappa Ratio for the ESG 100 index.

In FY2021 and FY2022, all three indices had negative Kappa Ratios, indicating that they all underperformed relative to their expected returns, given their level of risk. The Greenex index had the lowest Kappa Ratio, suggesting that it had the worst performance relative to its level of risk.

In overall, the Kappa Ratio results indicate that the ESG 100 index performed the best over the five-year period, as it had the highest Kappa Ratio in two out of five years and also with the

average ratio of 89.73. The Carbonex and Greenex indices had relatively lower Kappa Ratios, which indicates lower excess returns relative to their levels of risk.

SORTINO RATIO Table 1.11

Sortino				
Year	SENSEX	ESG 100	CARBONEX	GREENEX
FY2018	1.574	1.173	0.772	-0.471
FY2019	-4.133	-4.508	-4.852	-4.764
FY2020	7.528	8.766	8.361	9.369
FY2021	2.018	2.332	2.155	2.685
FY2022	-0.927	-1.164	-1.087	-1.782
Average	1.212	1.320	1.070	1.007

Source: (Based on Author's calculations)

The ESG 100 index has the highest average Sortino ratio of 1.320, indicating that it has generated the highest returns after adjusting risk among the four indices over the past five fiscal years. The Sensex index has an average Sortino ratio of 1.212, indicating that it has generated lower risk-adjusted returns than the ESG 100 index but still higher than the other two indices. The carbonex index has an average Sortino ratio of 1.070, which is lower than that of Sensex and ESG 100, indicating that it has generated lower risk-adjusted returns than these two indices. Finally, the greenex index has the lowest average Sortino ratio of 1.007, indicating that it has generated the lowest risk-adjusted returns among the four indices.

Overall, the ESG 100 index has outperformed the other three indices in terms of generating higher returns after adjusting the risk. Meanwhile, the greenex index has underperformed the other three indices in generating lower risk-adjusted returns.

Table 1.12

Information Ratio						
Particulars	FY 2018	FY 2019	FY2020	FY2021	FY2022	
BSE 100 ESG	-9.15	-19.05	28.39	8.55	-9.31	-0.114
BSE Carbonex	-27.00	-38.60	18.55	3.66	-5.64	-9.806
BSE Greenex	-28.63	-10.29	12.13	8.91	-11.75	-5.926

Source: (Based on Author's calculations)

BSE 100 ESG: The average Information Ratio for the BSE 100 ESG index over the five-year period is -0.114, indicating that the index underperformed on a risk-adjusted basis, generating negative excess returns per unit of risk beared to the benchmark relative.

BSE Carbonex: The average Information Ratio for the BSE Carbonex index over the five-year period is -9.806, indicating that the index significantly underperformed on a risk-adjusted basis, generating very negative excess returns per unit of risk taken cpmaored to the benchmark.

BSE Greenex: The average Information Ratio for the BSE Greenex index over the five-year period is -5.926, indicating that the index also significantly underperformed on a risk-adjusted basis, generating negative excess returns per unit of risk beared to the benchmark, but not as much as BSE Carbonex.

Based on these average Information Ratio values, we can conclude that BSE Carbonex performed the worst on a risk-adjusted basis over the five-year period, and BSE 100 ESG performed the best, but three indices show negative excess return of investment generated per unit of risk taken to the benchmark relative index for 5-year average.

Table 1.13

	M SQUARE(P*)					
Particulars	FY 2018	FY 2019	FY2020	FY2021	FY2022	Average
BSE 100 ESG	0.0216	0.037	-0.077	-0.013	-0.178	-0.041936558
BSE Carbonex	0.0419	0.065	-0.058	-0.003	-0.170	-0.024862469
BSE Greenex	0.1055	0.082	-0.122	-0.026	-0.191	-0.030198618

Source: (Based on Author's calculations)

To interpret the M square values, we need to compare them to 1. If the MM value is higher than 1, it means that the portfolio has better performed compared to benchmark on a adjusted-risk basis. If the M square value is less than 1, it means that the portfolio has not performed better than the benchmark on a risk-adjusted basis. If the M square value is equal to 1, it means that the portfolio has performed compared with the benchmark on a risk-adjusted basis.

Looking at the M square values, we can see that all three BSE indices have negative values for FY2022, indicating that they all underperformed their respective benchmarks on a risk-adjusted basis. However, BSE Carbonex and BSE Greenex have M square values that are closer to 1 than BSE 100 ESG for all five years, indicating that they have performed better on a risk-adjusted basis.

Comparing the average M square value, we can see that BSE Carbonex performed the best on average over the five-year period, with an average M square value that is closest to 1. BSE Greenex also performed relatively well, with an average M square value that is better than BSE 100 ESG.

Overall, based on the M square values, it appears that BSE Carbonex performed the best, followed by BSE Greenex and then BSE 100 ESG.

OMEGA RATIO

Table 1.14

Omega Ratio	2018	2019	2020	2021	2022	Average
Sensex	-1.717	1.239	0.641	0.806	0.978	0.389
ESG 100	3.110	2.947	1.314	2.435	3.000	2.561
Carbonex	3.220	1.189	1.364	2.465	3.043	2.256
Greenex	3.117	3.109	1.319	2.220	2.933	2.540

Source: (Based on Author's calculations)

Looking at the Omega Ratio values for Sensex, ESG 100, Carbonex, and Greenex, we can see that all four indices have positive Omega Ratios for all five years, indicating that the probability of positive returns is higher than the probability of negative returns.

To determine which index performed best compared to Sensex, we can look at the average Omega Ratio values over the five-year period. The average Omega Ratio for Sensex is 0.389, for ESG 100 is 2.561, for Carbonex is 2.256, and for Greenex is 2.540.

Comparing the average Omega Ratio values, we can see that all three ESG-themed indices (ESG 100, Carbonex, and Greenex) outperformed the Sensex on a risk-adjusted basis, as they all have average Omega Ratio values that are higher than 1. Among the three ESG-themed indices, ESG 100 has the highest average Omega Ratio, indicating that it performed the best compared to the Sensex on a risk-adjusted basis.

Second part of this study of green and non-green portfolio.

Table 1.15

GREEN STOCK PORTFOLIO	
1	Tata Motors
2	Power Grid
3	Adani Ports SEZ
4	Bharath Electronic Limited
5	ICICI Bank
6	Vedanta
7	Tata Steel
8	Ashok Leyland
9	ONGC
10	Federal Bank
11	SBI
12	Indian Oil Corp.
13	DLF
14	Ambuja Cement
15	GAIL

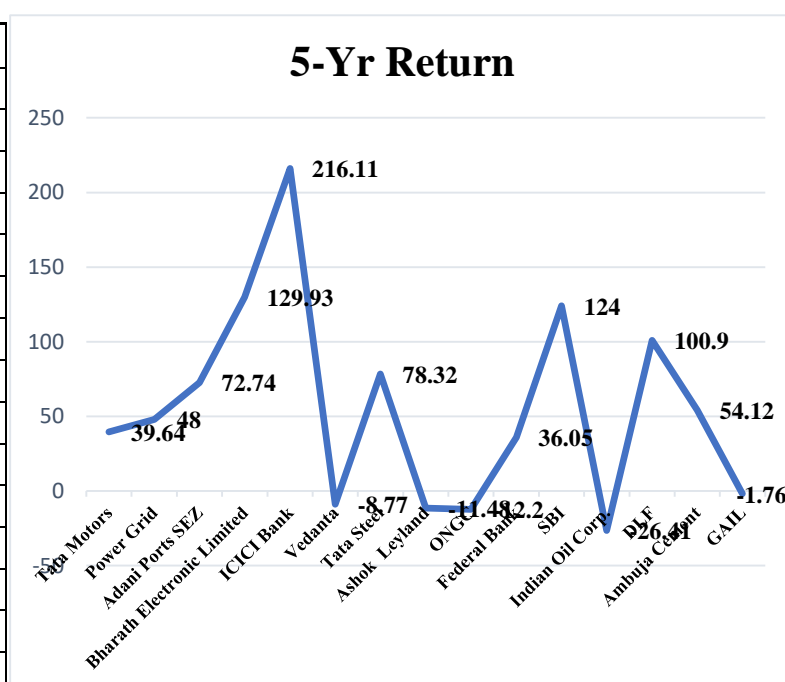


Fig.2.2 Source: (Based on Author's calculations)

Table 1.16

NON-GREEN STOCK PORTFOLIO	
1	Atul Auto
2	Reliance power
3	SCI
4	HAL
5	YES Bank
6	JP Assoc.
7	SAIL
8	TVS Motors
9	IGL
10	PNB Bank
11	Bank of Baroda
12	MRPL
13	Ibull Real Estate
14	India Cements
15	PetroNet LNG

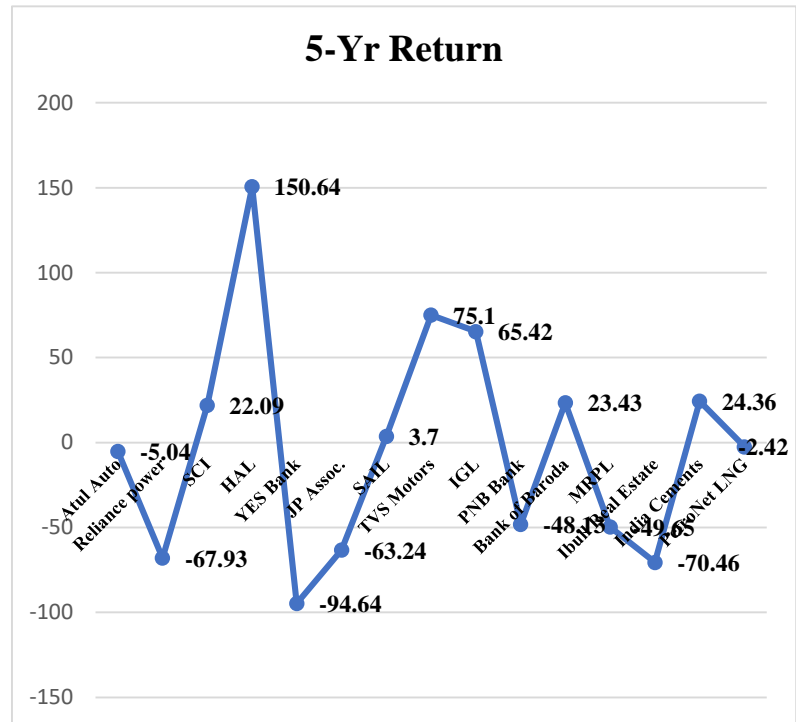


Fig. 2.3 Source: (Based on Author's calculations)

The above stock in the portfolio is taken as per the top volume of trades at that time of March 31, 2023.

The green portfolio has performed better compared to the non-green portfolio in terms of 5-year returns. The green stock portfolio has an average return of approximately 56.60%, while the non-green stock portfolio has an average return of approximately -2.45%.

The general trend of the green portfolio consistently outperformed the non-green portfolio over the period of 5 years.

Statistical Analysis of 5-year Returns of Green portfolio and non-green portfolio. H₅

EMPACT OF ESG SCORES ON RETURNS: H₆

We obtained an F-value of 1.0206 and a p-value of 0.4851 after conducting an F-test for two-sample variances. This p-value is higher than the critical value of 2.4837, concludes that there is not much significant difference between the variances of the green portfolio and the non-green portfolio, so the null hypothesis is not rejected.

In contrast, the t-test for two-samples where unequal variances were assumed yielded a t-value of 2.4004 and a p-value of 0.0233 for a two-tailed test. This p-value is less than the critical value of 2.0484, allowing us to reject the null hypothesis that there is no significant difference between the green portfolio and the non-green portfolio in terms of mean returns.

Therefore, we conclude that there is a statistically significant difference between the average returns of the green portfolio and the non-green portfolio.

Table 1.17

Green PF	ESG SCORES	Non-green PF	ESG Score
Tata Motors	27.50	Atul Auto	40.7
Power Grid	26.30	Reliance power	53.1
Adani Ports SEZ	12.60	SCI	25
Bharath Electronic Limited	34.00	HAL	44.1
ICICI Bank	26.50	YES Bank	27.4
Vedanta	40.90	JP Assoc.	21.1
Tata Steel	30.70	SAIL	40.4
Ashok Leyland	30.00	TVS Motors	18.1
ONGC	49.30	IGL	25.7
Federal Bank	42.30	PNB Bank	41
SBI	27.50	Bank of Baroda	47.8
Indian Oil Corp.	39.70	MRPL	40.2
DLF	18.20	Ibull Real Estate	24.4
Ambuja Cement	24.10	India Cements	44.3
GAIL	29.70	PetroNet LNG	31.1

Source: <https://www.sustainalytics.com/esg-rating/>

ESG RATING SCALE	
Inconsiderable	0 to10
Low	10 to 20
Medium	20 to 30
High	30 to 40
Severe	40+

Source: <https://www.sustainalytics.com/esg-rating/>

The calculated p-value (0.2495) is higher than the significance level (0.05), so the H_0 is not rejected. We find insufficient evidence to conclude that ESG scores influence the 5-year returns of green equities in this portfolio.

The regression analysis reveals that the coefficient of determination (R-squared) is 0.07236153, indicating that ESG scores only account for 7.24 percent of the variance in stock returns. The significance value of the F-test, 0.15059742, exceeds the significance threshold of 0.05, indicating that the model is not significant statistically. In addition, the p-value for the ESG score variable, 0.15059742, is greater than the significance threshold of 0.05, indicating that ESG scores have no impact on the returns of equities.

Therefore, we do not reject the H_0 that ESG scores have no effect on stock returns. The results indicate that there is no significant relationship between ESG scores and returns of stock.

WACC Analysis of green and non-green portfolio: H₇**F-test**

F	0.330302
P(F<=f) one-tail	0.02341
F Critical one-tail	0.402621

T-test

t Stat	-0.14033	
P(T<=t) one-tail	0.444839	
t Critical one-tail	1.717144	
P(T<=t) two-tail	0.889677	
t Critical two-tail	2.073873	

Source: (Based on Author's calculations)

The test is conducted to test whether the green company has the lower cost of capital compared to non-green company and found that for the F-Test for the variances of two-sample, the null hypothesis is that the variances of both portfolios show equal, while the unequal variances statement is alternate hypothesis. The test's p value is 0.02341, which is less than the significant threshold of 0.05. Therefore, we interpret the data, deny the H₀, and conclude that the variances of the two portfolios are not equal. For the 2-sample t-test Assuming Unequal Variances, the H₀ states that there is no statistical difference in the cost of capital between the two portfolios, while the alternative hypothesis states that there is a statistically significant difference. The test's p value of 0.444839 is greater than the significance threshold of 0.05. Therefore, we do not reject the H₀ and conclude that there is very little statistical difference which is not significant between the two portfolios' cost of capital. This is also demonstrated by the averages of the respective portfolios, where green portfolio average is approximately 12% and non-green portfolio's average is 11% approximately, disproving the assumption that green companies receive more cheaper capital than non-green companies.

Table 1.18

GREEN STOCK PORTFOLIO		WACC In%
1	Tata Motors	9.72
2	Power Grid	7.73
3	Adani Ports SEZ	12.25
4	Bharath Electronic Limited	12.13
5	ICICI Bank	14.88
6	Vedanta	11.32
7	Tata Steel	11.72
8	Ashok Leyland	10.37
9	ONGC	8.29
10	Federal Bank	22.19

11	SBI	20.17
12	Indian Oil Corp.	6.69
13	DLF	14.11
14	Ambuja Cement	9.98
15	GAIL	8.75

Source- website, <https://www.gurufocus.com/>

Table 1.19

NON-GREEN STOCK PORTFOLIO		WACC In%
1	Atul Auto	12.38
2	Reliance power	9.13
3	SCI	9.14
4	HAL	13.28
5	YES Bank	13.03
6	JP Assoc.	6.84
7	SAIL	12.51
8	TVS Motors	6.3
9	IGL	11.88
10	PNB Bank	37.18
11	Bank of Baroda	17.7
12	MRPL	4.74
13	Ibull Real Estate	11.33
14	India Cements	9.09
15	PetroNet LNG	10.53

Source: website, <https://www.gurufocus.com/>

Average of green portfolio- 12.02 **Average of non-green portfolio-12.33.**

SD/RISK OF GREEN PORTFOLIO AND NON-GREEN PORTFOLIO: H₈

Table 1.20

Source: (Based on Author's calculations)

The obtained value of p from the test is 0.2837, which is greater than the significance threshold of 0.05. Therefore, do not reject the H_0 and state that there is insufficient proof to conclude that there is a statistically

GREEN STOCK PORTFOLIO		SD	NON-GREEN STOCK PORTFOLIO		SD
1	Tata Motors	132.07	1	Atul Auto	80.04
2	Power Grid	19.95	2	Reliance power	10.04
3	Adani Ports SEZ	190.71	3	SCI	36.20
4	Bharath Electronic Lim	55.78	4	HAL	657.42
5	ICICI Bank	205.40	5	YES Bank	105.05
6	Vedanta	83.68	6	JP Assoc.	3.95
7	Tata Steel	386.33	7	SAIL	29.33
8	Ashok Leyland	32.72	8	TVS Motors	223.95
9	ONGC	32.01	9	IGL	10.53
10	Federal Bank	22.96	10	PNB Bank	19.87
11	SBI	123.50	11	Bank of Baroda	36.64
12	Indian Oil Corp.	30.99	12	MRPL	18.64
13	DLF	92.97	13	Ibull Real Estate	39.58
14	Ambuja Cement	100.63	14	India Cements	51.40
15	GAIL	102.09	15	PetroNet LNG	19.22
	average	107.45		average	89.46

significant difference between the

risk/standard deviation of the green and non-green portfolios.

CONCLUSION & DISCUSSION:

Analysis of green stocks and portfolios, with its analysis, can be concluded that investment in sustainable future has become a significant trend in the global financial market. The concept of green investing has gained momentum in recent years as individuals and organizations are becoming more aware of the need to support environmentally friendly practices and technologies.

Investors are emergingly looking for ways to keep up their financial goals with their environmental and social values. Investing in green stocks and portfolios can be an effective way to achieve this alignment while also contributing to the development of a sustainable future. The analysis of green stocks and portfolios has revealed that companies and industries that prioritize sustainability practices tend to outperform to some extent with which those that do not. Moreover, the global trend towards sustainability and environmental responsibility is likely to continue, providing a long-term growth opportunity for green investments. Governments, businesses, and consumers are all becoming more aware of the need to reduce carbon emissions and support sustainable practices, leading to increased demand for green products and service

However, it is important to note that green investing also comes with certain risks and challenges, including market volatility and the potential for greenwashing or misrepresentation of environmental claims by companies.

There is an unusual trend in the measures of portfolio due to the consideration of limited data for the analysis and effect of macro factors, but the study helps in standard procedure to analyze the portfolios and further study can be done by taking sufficient data which gives more approximation and results for the study.

Therefore, the crucial task for investors is to do in-depth research when selecting green stocks and portfolios. This includes analyzing the company's sustainability practices and financial performance, as well as considering broader economic, social, and environmental factors.

In conclusion, investment in a sustainable future through green stocks and portfolios has the potential to yield financial returns while also contributing to the development of a more sustainable world. However, investors must exercise caution and conduct thorough research to ensure that their investments align with their values and goals, while also minimizing potential risks.

FINDINGS:

Overall Indices Performance Summary: Table 1.21

<u>Tools</u>	BSE Sensex	BSE 100 ESG	BSE Carbonex	BSE Greenex
Average Annual Returns		Outperformed		
Beta		More standard		
Standard Deviation			Less Risk	
Sharpe Ratio		Outperformed		
Treynor Ratio		Outperformed		
Jensen's Alpha		Outperformed		
Sortino Ratio		Outperformed		
Kappa Ratio		Outperformed		
Information Ratio		Outperformed		
M-Square Ratio			Outperformed	
Omega Ratio		Outperformed		

Source: (Based on Author's calculations)

According to the summary, 100 ESG, Carbonex, and Greenex outperformed BSE Sensex in terms of average annual returns. Additionally, BSE Carbonex and BSE Greenex had a lower beta, which suggests that they were less volatile than BSE Sensex.

Sustainability indices also outperformed the BSE Sensex according to the Sharpe, Treynor, Sortino, Kappa, information, and Omega ratios. In general, these ratios are used to evaluate the risk-adjusted investment performance and suggest that the ESG, Carbonex, and Greenex indices generated higher risk-adjusted returns than the BSE Sensex. Jensen's alpha, which measures the amount of extra return over the expected return, was positive for BSE 100 ESG, suggesting that this index had higher returns than would be expected based on its beta.

Finally, the M-Square ratio, compares the adjusted-risk- returns for the portfolio to a benchmark, showed that all three indices -100 ESG, Carbonex, and Greenex - outperformed their respective benchmarks. The measures are negative for a few time periods but considered outperformed comparatively among other indices.

Based on the measures analyzed in the research paper, it appears that 100 ESG, Carbonex, and Greenex (Sustainability Indices) outperformed BSE Sensex in terms of both returns and adjusted-risk performance.

And weighted average cost of capital of green portfolio is not much cheaper compared to non-green portfolio which reveals that including the ESG factors may not influence the behavior of Investors to lend at lower rate, but this may change in time, as rise in awareness about Sustainability has been growing and companies may get capital at subsidized rates in future.

The study illustrated the findings that the sustainability Indices outperformed better on the adjusted risk returns components compared to Sensex and gave excess returns compared to the Sensex. There is an uneven trend in all the measures of the portfolio because of the macro factors like covid-19 and economic slowdown when considered 5-year data which showed the results contrast and extreme in couple of years.

Null Hypothesis Findings: Null Hypothesis:

H₁- accept the hypothesis statement.

H₂ - accept the hypothesis statement.

H₃- rejects the hypothesis statement.

H₄- accept the hypothesis statement.

H₅- rejects the hypothesis statement.

H₆- accept the hypothesis statement.

H₇- accept the hypothesis statement.

H₈- accept the hypothesis statement.

The Null hypothesis of all the measures state that there is no difference significantly statistically between the Sensex and indices of sustainability and also between the green portfolio and non-green portfolio, by the execution of the statistical tests, the study states that 6 out of 8 hypotheses of Null are accepted which means there is no significant difference in variables/sample considered.

Only the ratio of Sharpe, which is adjusted risk-return, and the 5-year return hypothesis of green and non-green portfolios are substantially different.

From the study, illustrates that by the measures of financial analysis tools there is benefit of investing in the sustainability and sustainability indices outperformed in most of the cases, but there is not enough evidence to prove it with statistical tests where results are contrast with not much significant difference.

Limitations:

This research paper is subject to a limitation due to the unavailability of historical ESG scores. The absence of such data has impacted our ability to analyze long-term trends in ESG performance, compare ESG performance, determine the correlation between ESG and financial performance, and gain insights into a company's sustainability journey. This limitation states the fact that ESG reporting is a recent phenomenon, where not all companies may have historical data available. The possible implications of this limitation are that it could restrict the depth and scope of our analysis, which, in turn, may affect the reliability of our findings and conclusions.

Another limitation of this research paper is the use of five years of data, which was necessitated by resource constraints. This duration may not be adequate to capture long-term trends in the variables analyzed. Furthermore, the COVID-19 pandemic occurred during this period, which could have significantly affected the variables and led to atypical outcomes that may not reflect the overall trend. Nonetheless, the analysis was able to reveal the interrelationships between the chosen variables and measures and provide insights into their overall impact.

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Metaverse: A Virtual Battleground for Brands

Kshemaindra Acharya Phaniharam*

Abstract

The advent of Metaverse has opened a plethora of digital and transformational opportunities for organizations across the industries and functions. One such function that has been at the forefront to harness the advantages of this virtual universe is marketing and brands have been leveraging it to transform their communications and customer experiences for their target customers for creating the branding edge. This article starts by providing basic understanding of Metaverse and the necessary elements needed by organizations to build their branding efforts in it. The article also discusses the brand game that the organizations are playing in the Metaverse and consumer's perspectives of Metaverse by including insights from survey reports conducted with both marketers and consumers. It studies brand stories that have seen success and failure in Metaverse marketing and provides brand lessons that can be applied by other brands that are looking forward adopt Metaverse marketing. It further discusses on challenges and critical views of marketers and consumers about Metaverse. Through collating lessons from market overview, brand cases, user perceptions and expert suggestions, the article finally tries to provide pointers to organizations which are looking forward to transform their brand marketing and consumer experiences with the power of Metaverse.

Key words

Metaverse, Digital Marketing, Metaverse Marketing, Digital Experiences. Branding, Virtual reality

Introduction

The most famous origins of the word 'Metaverse' can be traced back to 1992, in a novel "Snow Crash" and now since 2021, it has become a hot trending topic. Metaverse can be defined as a collective virtual space that is created by the convergence of virtually enhanced physical and digital reality (Gupta, 2022). This is backed by multiple hardware and software elements. Metaverse is a 3 Dimensional (3D) world where business, information and communication tools are immersive and interoperable making it a 3D layer around the internet (Hollensen et al., 2022). Organizations across industries are trying to leverage this virtual space and the highest buzz around the Metaverse was created in 2021, when Facebook rebranded itself as 'Meta' with its vision to become a social Metaverse company with a set of these interconnected spaces of digital world that lets users do the things they can't do in the physical world, but it is characterized by social presence ("Connect 2021: Our Vision for the Metaverse," 2021). The Metaverse is set to bring three prominent changes in terms of people's contextual experiences, ownership and control of their time and their identity where they want to traverse Metaverse with their digital persona (Stackpole, 2022). Putting the definition of Metaverse in a simpler way by calling it a virtual world is easy for everyone but there is an entire ecosystem of technology that run behind it that make this virtual reality come to reality.

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Basic ingredients of Metaverse

The Metaverse though is yet to be explored fully; its potential can be unleashed in leaps and bounds. The current Metaverse can be seen having three layers: Connectivity where network infrastructure comes to play, a layer of data management where cloud and edge computing support the operations and next comes application layer where the actual user experiences and touch points take place, with all of them being supported by enablers such as 3D/Virtual Reality (VR)/Augmented Reality (AR) content development engines, hardware devices and chipsets along with digital policies. (Mathur, Bevan & Gera, 2022).

Branding in Metaverse

Marketers since the beginning of marketing have been adopting different and unique approaches to build their brands and sustain them in customer's minds. Though this whole universe of virtual reality and Metaverse have started as innovations in gaming, it did not take much time for brands to find great opportunities of branding and transforming their consumer engagement experiences. There are many use-cases that can be found across industries from beauty and fashion to construction and real-estate. A user can put on a VR headset and visit a new home, go to a car dealership and do a test drive that could feel realistic. Business users can visit factories and inspect the operations or meet their board of directors without leaving their office or personal spaces. Now all such instances will enhance and encourage users through realistic and engaging experiences that the marketers are leveraging and exploring. The branding and advertising efforts through strategic integration of augmented reality experiences along with brand cues will become a sub division of overall marketing strategy and brand goals (Rauschnabel et al, 2022). Businesses are aiming to enrich their customer experiences, introduce Metaverse exclusive products and support virtual payments and finance (Korizis et al, 2022). It is clear that businesses are ready to unleash the full potential of Metaverse and consumers are willing to explore what value it brings to them. The market has seen examples of gaming Metaverses like Roblox and Fortnite which provide brands with an innovative scope for marketing their products. There is surely a need to understand why brands are interested and what is in it for marketers in this virtual universe as new non-gaming Metaverses are coming up. Gartner predicts that 30% of Organizations across the world will have their products and services ready for Metaverse by 2026 and 25% of people will spend at least one hour per day in Metaverse by 2026 (Resnick, 2022). A report from Research and Markets shows that in 2020, the global Metaverse market stood at US\$ 107.1 B and is projected to reach US\$ 758.6 B by 2026. When organizations provide experience-based advertising in the Metaverse and enhance its media fidelity and contextual interactivity of the message can lead to behavioral engagement in and out of the Metaverse (Ahn et al, 2022). Rauschnabel et al, 2022 have proposed BICK four framework leveraging AR marketing that can help organizations achieve Metaverse and AR marketing goals on aspects of building brands and strengthening brands, inspire customers, convince customers in terms of generating buying interest and sales along with keeping customers loyal. Metaverse will be transformative and is likely to build positive impact. Companies which delay taking actions will have to operate on worlds designed by or for someone else. (Charlton, 2022)

Brand stories

Nike: A Metaverse branding story feels incomplete without talking about Nike. It was one of the earliest adopters of Metaverse. Nike was at risk of losing 160 million pairs of shoes due to supply issues in Vietnam. As an innovative strategy, Nike launched character skins wearing Nike's Jordan brand sneakers in partnership with Fortnite. Nike filed a patent for "CryptoKicks" in December 2019, which would link physical shoes with Non-Fungible Tokens (NFT) to verify ownership. The patent also included technology to combine two sneaker designs into a new one. This move to the Metaverse is one of the factors that helped Nike reach over \$12 billion in revenue by August 2021 itself. ("Nike Wants to Sell Digital Shoes", 2021). In November 2021, Nike collaborated with Roblox and launched 'Nikeland', a Metaverse world that allowed its customers to create avatars, play games and earn rewards such as medals, clothing for avatars, and building materials, by doing real-life exercises and playing mini-games. Nike also offers products like virtual sneakers that Nikeland users can buy for their avatars. In December Nike announced the acquisition of RTFKT, a non-fungible token studio that produces digital collectibles (including digital sneakers) to

merge culture and gaming (“Nike Acquires RTFKT”, 2021). Nike is clearly spearheading the brand game in the Metaverse.

Coca Cola: The multi-national brand leveraged NFTs (Unique digital assets) to sell digital assets that harnessed the nostalgic factor among customers. It conducted a digital auction of branded collectables that earned the brand over \$500,000 in a 72-hour auction. (“Coca-Cola NFTs Auctioned For More Than \$575K”, 2021). The brand kept on launching digital collectables throughout the year from its initial launch for different special occasion trying to match with their brand views and principles.

Vans: the skateboarding brand launched a virtual skate park in Roblox that enabled players to try out new tricks and earn rewards which they can use to redeem in virtual store. The creators have seen an increasing 48 million visitors to their park till date (Faridani, 2021). Vans showed a good example of using Metaverse for brand awareness and engagement.

Gucci: Partnering with Roblox, Gucci launched ‘Gucci Garden’ in 2021. The garden had themed rooms which users could visit and the where users can explore different products, try out different skins. Gucci even saw one of their bags fetching \$4,000 in real world cash. This attempt also helps brands like Gucci counter fake products which is one of the biggest challenges of luxury brands. (Ellwood, 2022)

Ferrari: The Italian brand realized the potential of gaming platforms of Metaverse. Ferrari released its 296 Gran Turismo Berlinetta (GTB) model which was not available in the real world yet. The Fortnite community players were able to take the car for a drive in the game where users got a realistic and detailed overview of the new model creating hype and anticipation for the for its real-life debut (Rees, 2021).

Wendy’s: Wendy’s has always been famous in the social media platform twitter. The brand was not going to lag behind any other brands in terms of Metaverse also. It saw ‘Fortnite’ one of the very popular gaming platform as the right platform with huge loyal player base. The brand launched a game called “Food fight”. The players were challenged to rid the world of frozen meat (Penegor, 2019). While providing entertainment to players, the game was a strategic alignment with its modus operandi of never serving frozen meat. The game was also streamed on Twitch, which got nearly one fourth of a million views.

There are many such examples of brands from across different industries. Adidas, Disney Samsung, Hyundai and many fashion houses were among the prominent brands that were gaining positive outcomes in Metaverse along with some celebrities. But, it seems to be very advantageous for clothing, apparel and accessory brands where though physical experience is not involved, users were actively ready to dress their avatars with latest branded clothing and apparel. The most interesting use cases were from brands like Wendy’s and Ferrari where their core experience could be perceived to be more physical. These brands have cleverly and organically immersed themselves into the Metaverse even more aligning with their brand visions and goals. As mentioned above, clothing or accessory brands seem to have enjoyed a better advantage and can leverage AR and digital assets, especially luxury brands. These brands can use AR to improve brand equity by smartly including the attributes of luxury (Javornik et al, 2021). One should also observe that some organizations have also have seen underwhelming response from users at first attempts such as JP Morgan where a virtual lounge launched by them had less or no engagement or activities do be done in the space and was considered as a letdown. But the brand is looking forward for potential need of financial institutions in Metaverse similar to real world needs of financial institutions for real estate. (Shelvin, 2022).

Inferences: Brands have seen success when there was engaging content or personalized experiences in the Metaverse, but all these exciting opportunities do not come without cautions and suggestions from experts and analysts. Organizations need to understand the customer perspectives and create value based out of it and also marketers need to understand and learn through experimentation in Metaverse. For better benefits and experimental learning, brands can leverage a combination of gamification, owning virtual real estate in the Metaverse combined with their own digital assets like NFTs and selling their digital products or merchandise to the user's avatars combined with native advertising through billboards and brand logos.

Brand lessons

Apart from the above examples presented, there are many real brand examples across industries. Each brand has managed to find a right balance of their goals and valuable experience for users. Few aspects of what went right and the lessons that could be applied by other brands with respect to their marketing goals are tabulated below.

Lesson that can be applied	Brand Example
Brands can foray organically or natively into the Metaverse. This should appear as natural placement rather than forcedly placing the brand cues. Branded accessories for avatars, billboards within the virtual world inside a game can be such tactics	<ul style="list-style-type: none"> • Nike's accessories to game avatars • Coca-cola billboards placed in gaming environment
Enable immersive experiences and provide power to users to engage in the platform to increase their personalized involvement	<ul style="list-style-type: none"> • Nike's Cryptokicks and Nikeland enables players play games and earn rewards • Vans virtual skate park allows gamers to try new maneuvers
Sell goods or assets to users within the platform	<ul style="list-style-type: none"> • Gucci garden sold virtual goods • Coca-cola's auction of digital collectables.
Provide actual value from engagement that users can leverage	<ul style="list-style-type: none"> • Vans users could earn points from their game play and redeem in virtual store.
Invest on virtual real estate while the costs are affordable, which could be a digital venue of the brand such as a virtual store, a specified land within a platform or own virtual world.	<ul style="list-style-type: none"> • Gucci Garden (In Roblox) • Nikeland (Its Metaverse world) • Vans skate park (In Roblox)
Compliment real world marketing goals using Metaverse experiences. This could be to promote a new launch, create brand awareness or to enhance brand communications and vision.	<ul style="list-style-type: none"> • Ferrari's virtual launch of 296GTB model helps create awareness and demand for its real life launch • Wendy's game 'Food Fight' aligns with the brands vision of not serving frozen meat

Table 1: Brand Lessons

Consumer and marketer perspectives: Opportunities and Risks

- Qualtrics conducted a survey with 800 marketers and 2000 consumers who were familiar with Metaverse. 97% of Marketers say might advertise more on Metaverse five years from 2022. 74% of marketers surveyed are already advertising on it and 59% of marketers noted that Metaverse was their most successful channel. 37% of marketers who do not currently advertise on Metaverse feel there is not enough validation to adopt Metaverse advertising. Coming to the consumers, the report shows that male demography spends most time on Metaverse and majority consumers are aged between 26 and 41. Though only 2% said they would prefer the channel for personal use, 38% of consumers personally spend their time in Metaverse and most importantly. 68% consumers said

- they would purchase a product through Metaverse. ("Future of the Metaverse: Advertising insights from marketers and consumers", 2022).
- Commerce Next 2022 report showed positive numbers for retailers where 41% of their respondents showed interest in buying real world products through Metaverse, where interest or willingness to attend a sporting event or concert and shop in virtual mall stood at second and third spots respectively. The report also showed that the consumers spend most time on playing games followed by socializing, shopping, attending events and buying NFTs in that order of choice. ("2022 Consumer Trends: Metaverse & Social Commerce", 2022).
- A Gartner survey of American users from January 2022 showed that 35% of them have not heard of Metaverse. Gartner suggests that the experiences or the new innovative opportunities in Metaverse should be designed so that the consumers can grasp them easily to change consumer attitudes. Further suggests product managers to tread carefully and take time to learn the ecosystem of Metaverse to position their brands competitively as the adoption of Metaverse technologies are still fragmented to invest heavily in one specific Metaverse (Rees, 2022)

Inferences

The Metaverse is catching up to be an exciting space for both consumers specially Gen Z and marketers even though it is very new and yet to be fully discovered. But, apart from those users who do not know about Metaverse, the users that have used have shown positive interest towards exploring the space which signals marketers that there is plenty of opportunity for them to find value from Metaverse marketing. Currently the costs of running campaigns seem affordable due to the newness of the channel but could increase with the demand.

Challenges

One of the main challenges observed are the awareness of Metaverse among consumers. Gen Z and technically inclined audience can show interest but the customers segments for brands and retailers are not limited to only one group of audience. Another challenge comes with the technical aspects of the Metaverse. The AR/VR experiences are still building up overcoming their experiential flaws but not everyone from the customers owns such devices or can afford to (Elnaj, 2022). Even marketers feel overwhelmed by the technology adoption into their marketing function. If creating awareness in a mass manner is one challenge, a user being enabled with the necessary technology is another challenge. There is also a significant concern of data privacy and safety as big names such Meta (Facebook) has felt the brunt of judiciary for their data privacy and protection practices. More strengthened digital laws should help in reducing the woes of Metaverse marketing. Monetary regulations will have impact on purchases and adoption of crypto as these aspects can be easily impacted by misconceptions among audience. Organizations should embrace the Metaverse, mitigate negative consequences from Metaverse and navigate through the technical challenges to create value and meaningful experiences for customers. Managers from organizations targeting Metaverse should strive to build trust in the ecosystem to convince and encourage individuals that Metaverse is safe and also worth their time and effort (Golf-Papez et al, 2022).

Discussion and Conclusion

Metaverse has surely caught the eye of modern-day marketers who are trying to include it in their marketing value chain. Due to its recency, organizations might face some issues in adoption of the technologies and investments needed it until more successful use cases come up to strengthen its validation. There is a lot of technology building to be done in terms of both organizational end and also enablers for users to adopt. Though there are no prominent or defined set of business models yet, Organizations should build these capabilities over the time by experimenting, learning and smartly investing in the right media and also can leverage the services from IT or consulting firms which are coming up with transformational services. There have also been instances of organizations acquiring Metaverse technology companies to build their

capabilities. Big and established players are more enabled to leverage this new universe of marketing where as it can take several years, many regulations and best practices for every brand form big to small position themselves competently in the same space. One advantage that the smaller players can utilize is that the current cost of running campaigns is affordable due to lower number of players competing in this channel. For this, organizations can -

- Define clear goals for Metaverse marketing.
- Identify most suitable Metaverse platforms to either collaborate with or acquire to help reach those goals.
- Understand where consumers are deriving value from and design their engagements or experiences to deliver the same. Try to find monetization ideas to include in those experiences.
- Understand or define the right way of measuring campaigns and re-align the efforts accordingly
- Be vigilant and study the market and competition. This will help in designing experiences in line with brand perceptions and also help to better plan for any risk or back fire from the market.

At the consumer end there is definitely low awareness and risk of misconceptions being created over Metaverse which can slow down adoption among consumers but it could be seen that those users who have used or the marketers who advertised in Metaverse are finding value in it. Like any other new product or technology, there will away be early adopters (such as millennials and Genz in this case) and innovators who will pave way for other segments to follow. The more refined the experience and more value consumers find, the faster they will adopt Metaverse. On the whole, it is clear that Metaverse is here to stay and has huge potential to be a popular channel of branding and transforming consumer engagement and experiences. Metaverse is yet to unleash its full potential.

Limitations

The research is limited to secondary research and is reliant on published works in the area. The practices or suggestion provided are from theoretical learning or from few successful cases. Further studies and research should be done as the adoption and consumer perceptions grow along with the growth of Metaverse which can lead to diverse primary research from various industries and demographics of consumers.

Annexure

Table 1: Brand Lessons

Declaration

The author declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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“Evaluating sentiment analysis of online tweets pertaining to the COVID-19 outbreak through the use of deep learning and machine learning algorithms”

Ms. Aarti Agarwal*

Abstract:

This study examines how the COVID-19 pandemic has changed online communication, with a particular emphasis on sentiment analysis in tweets. People now rely heavily on social media, especially Twitter, to share their thoughts and feelings in real time. As a computer science research scholar, I am primarily interested in using sentiment analysis to examine the pandemic's significant effects on online discourse. This literature review intends to examine sentiments expressed in tweets throughout the epidemic, providing insights into social responses and opinions. It uses advanced deep learning and machine learning methods to achieve this. The study integrates a thorough literature assessment, consolidating current understanding of sentiment analysis and tackling the distinct obstacles presented by the pandemic scenario. The study adds to a better understanding of how technology-mediated communication reflects and influences societal responses to unexpected difficulties like the COVID-19 epidemic by illuminating the intricate interaction of emotions and opinions in the digital arena during a worldwide catastrophe. This literature study addresses the effects of COVID-19 on people and how they responded to the epidemic by looking at the tweets, and it offers insights into the effectiveness of various machine learning and deep learning algorithms over a sizable Tweeter dataset. This would facilitate the decision-making process for decision-makers in a variety of professions, including but not limited to business, politics, financial management, health and insurance, and other areas.

Keywords:

Sentiment Analysis, COVID-19, Tweets analysis, Machine Learning Algorithms, Deep Learning Algorithms, Decision Making

Introduction:

The COVID-19 pandemic has affected every facet of human existence, resulting in a paradigm shift in global dynamics that impacts social relationships, economics, and health. People began to use social media, particularly twitter, as a real-time platform for exchanging thoughts, concerns, and opinions as the world faced unprecedented challenges. During this time, the value of social media in spreading knowledge and expressing the general opinion of a populace became more and more evident. The explosion of social media usage brought attention to the necessity of having a sophisticated grasp of the opinions expressed on sites like Twitter. Within this framework, machine learning algorithms for sentiment analysis become an essential tool. Decision-makers in a variety of disciplines can make better decisions by methodically examining the sentiments included in tweets, which provides them with priceless insights into the opinions of the public. Through the use of cutting-edge algorithms, this study aims to explore this virtual tapestry of viewpoints and decipher the complex emotional terrain that emerged in tweets during the pandemic, ultimately offering a nuanced understanding that can assist decision-makers in navigating the complex challenges presented by COVID-19.

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Research Objective:

The objective of this study is to examine, compile, and evaluate previous research on the "Impact of COVID-19 using Sentiment Analysis on online tweets" using the phrases "deep learning," "machine learning," and "sentiment analysis," among others.

Following are the main objectives of this review paper:

- Assessing the current status of the literature regarding the use of sentiment analysis, machine learning, and deep learning in the context of social media, particularly in light of the COVID-19 epidemic.
- Examining different research methods and techniques used to analyze the attitudes found in tweets and other online content during times of crisis, such a pandemic.
- Combining data to suggest novel approaches and strategies that tackle the particular difficulties presented by the COVID-19 situation, improving sentiment analysis's precision and dependability in online conversation.
- Showcasing the potential benefits of sentiment analysis in tweets for decision-makers across a range of industries, highlighting how it may be used to handle crises, evaluate public opinion, and inform policy decisions.
- Analyzing the moral issues surrounding sentiment analysis, such as potential biases in computational methods, privacy concerns, and the responsible use of data when researching delicate subjects like a pandemic.
- Pointing out areas in which more research is required, assisting in defining the parameters of next investigations into sentiment analysis in crisis scenarios, and adding to the current conversation in the subject.

Literature Review:

The topic of most discussion on Twitter was COVID-19. People from all across the world have used Twitter to share their ideas and opinions during the outbreak. The authors of this study [1] have shown how sentiment analysis might provide useful insights for controlling the epidemic by applying a behavioral and social science focus. The thorough literature study conducted by the authors looked at the best-performing classification algorithms for COVID-19-related Twitter data, emphasizing machine learning-based sentiment analysis techniques. The ACM DL, IEEE Xplore DL, ScienceDirect, SpringerLink, and AIS Electronic Library databases were the five that the authors searched. Thirty papers that looked more closely at sentiment analysis as a tool for assessing public opinion on COVID-19-related issues were found through this search. Between October 2019 and January 2022, they were released. Their results show that ensemble models, which combine different machine learning classifiers, are the most accurate models. According to our research, sentiment analysis in the COVID-19 setting is primarily domain- and application-specific. This implies that algorithms for classification that work well on one dataset might not work well on another. Because the bulk of studies used English datasets, their conclusions might not be as applicable as they could be. We found that ensemble models, comprising several machine learning classifiers, generally outperform single classifier models. Furthermore, DL classifiers demonstrate excellent accuracy when provided with well-labeled data. In particular, pre-trained models like BERT and RoBERTa on Twitter data exhibit promise. Through sentiment analysis of COVID-19 Twitter data, governments and health authorities may be able to alter the course of the pandemic by making informed decisions in the ongoing battle against the coronavirus and any future mutations. Several restrictions were noted: First off, their research hasn't produced any distinct patterns that would suggest the category or circumstance in which a particular type of classifier works best. Secondly, English datasets form the basis of most investigations. As a result, the findings are less applicable to other nations where English is not the primary language. Thirdly, it may not be justified to use sentiment analysis instead of a less technical survey study because the robustness of ML

classification models in the context of COVID-19 has not been thoroughly investigated. Fourth, due to representational flaws, opinions shared on Twitter might not reflect the opinions of the general audience.

With Python and its sentiment analysis packages, the authors were able to determine the public sentiment related to the pandemic based on Tweets that were particular to the coronavirus. In the context of textual analytics, we give a summary of two key machine learning classification techniques and evaluate how well they categorize tweets with different durations of Coronavirus. This study [2] sheds light on the evolution of coronavirus fear sentiment and related strategies, constraints, and opportunities. For this project, we created a sentiment analysis system that can recognize a tweet's sentiment and categorize it into one of five groups: "Extremely Positive," "Positive," "Neutral," "Negative," and "Extremely Negative." Based on COVID-19-related hashtags and keywords, the writers gathered Twitter data. Twitter was selected for the study in order to preserve the reliability of the data and to make it simple to extract user tweets. The dataset of English tweets about COVID-19 was chosen for this investigation. We analyzed and processed 82,314 tweets. Their models attempted to accurately predict the different feelings. They have trained their dataset using a variety of models, however some models exhibit more accuracy than others. Classification algorithms are appropriate since it's necessary to categorize the tweet in order to forecast the sentiment. The accuracy of the Logistic Regression was higher. One of five sentiments can be mapped to each tweet. As a result, the model predicts the sentiment to which the tweet maps. They used this information to examine how people felt about the outbreak. Text can also convey the feelings of the writer.

Artificial intelligence (AI) is the study of modeling animal or human behavior in artificial entities, especially with regard to learning and problem-solving. Artificial intelligence finds application in medicine both in virtual and tangible realms. It is utilized in many different systems, such as patient assistance robots, information management, and decision-making support for physicians. The use of machine learning techniques to look for feelings expressed in text on microblogging social networks is a crucial part of comprehending how people view the social, economic, political, and technological ramifications of the COVID-19 pandemic. This article [3] is based on a monthly analysis of tweets written in English since the pandemic began. Since COVID-19 is a worldwide health concern that has affected most countries and their economies, this article looks at how people have responded to the pandemic. The main goal of this research is to determine the public's attitude, whether positive or negative, by utilizing machine learning algorithms and natural language processing techniques. It seems that people's sentiments regarding the pandemic are generally positive, despite the fact that the analysis revealed a diversity of opinions. Negative sentiments peaked in January 2020, and in March 2020, the COVID-19 pandemic was officially declared, triggering the implementation of safety protocols and precautions in many nations. Positive sentiments were also on the rise at the same time as these events. In conclusion, 46% of users reported feeling negatively, while 54% reported feeling positively. This study's methodology is based on a general framework that allows for the analysis and measurement of the frequency of the desired outcomes in the text under study by changing the data source. This guarantees that other works with similar features can reproduce the process.

Using R statistical software and its sentiment analysis packages, the authors of this study [4] used coronavirus-specific tweets to measure public mood about the outbreak. As COVID-19 approached peak levels in the US, we provide insight into how anxiety and emotion altered over time with the aid of essential textual data visualizations and descriptive textual analytics. Additionally, we assess two fundamental machine learning (ML) classification techniques' efficacy in textual analytics and offer a methodological synopsis of their capacity to categorize tweets with disparate Coronavirus durations. Using the Naïve Bayes approach, they found a high 91% categorization accuracy for brief Tweets. This research sheds insight on the evolution of coronavirus fear sentiment and explores related strategies, ramifications, opportunities, and limitations. The authors contend that much more work needs to be done on a range of public and private communication channels, news sources, and social media, even though the current study stream helps with the strategy process. These kinds of fixes will also be essential for developing a long-term recovery plan after COVID-19. With textual analytics and machine learning, for instance, policymakers can better target public requests and create sentiment-specific communication campaigns by gaining insight into popular

sentiment and opinions. By applying these research and machine learning algorithms, corporations and small enterprises can also gain additional insight into the opinions and expectations of their clientele.

In this study, [5] Python programming and the Tweepy module were used to harvest Twitter data from social media platforms. Sentiment analysis was done with the Python TextBlob module. Once sentiment analysis measurements were obtained, the data was presented graphically. They rely on two selected hashtag keywords for their Twitter data collection: "COVID-19, coronavirus." The data was collected during one of the weeks when the coronavirus was most common using the Twitter API and the Python tweepy package. 530232 tweets were gathered, and the Python TextBlob module was used to apply sentiment analysis techniques. Based on the polarity keywords for both COVID-19 and coronavirus, the results showed that more than half of the records were neutral toll, and around 64% of the records were objective. According to this study, people's reactions vary day to day when it comes to expressing their feelings on social media, especially Twitter.

This study [6] examines views of COVID-19 that users have shared on Twitter, one of the most popular social media sites. To do this, a machine learning model was developed using a dataset of English tweets pertaining to COVID-19. For binary (positive, negative) and ternary (positive, negative, and neutral) classifications, various combinations of machine learning classification algorithms (Support Vector Machine (SVM), Random Forest (RF), and XGBoost (XGB)) and feature extraction techniques (Term Frequency-Inverse Document Frequency (TF-IDF) and N-gram) were developed and applied to the dataset. When the efficacy of the different models was evaluated, it was discovered that the XGB classification approach, which produces the best results with an accuracy of 90%, uses bigram and unigram for binary classification. The study discovered that, in the binary class dataset using unigrams and bigram, XGBoost performs 90% better in sentiment analysis than Support Vector Machine and Random Forest. In terms of performance, binary classification also fared better than multi-class classification. Governments and nations can use this sentiment analysis technique to evaluate the impact of the pandemic and preventive efforts on people's mental and emotional health and to take early action to mitigate the impacts or stop them from getting worse. The model can also be used by mental health professionals and the medical community to evaluate the mental health of the general public and promptly address emotional and mental health issues before they deteriorate and necessitate medical intervention, such as suicidal ideation.

In this article, [7] data from Twitter was analyzed using the R programming language. [7] We have collected Twitter data based on hashtag terms like COVID-19, coronavirus, deaths, new case, and recovered. The authors of this paper classified the sentiment evaluations into three categories: positive, negative, and neutral using an algorithm they created dubbed the Hybrid Heterogeneous Support Vector Machine (H-SVM). They have also contrasted the suggested method's performance with that of Recurrent Neural Networks (RNN) and Support Vector Machines (SVM) using a number of measures, including F1 score, accuracy, recall, and precision. The dataset used in this study was obtained via the IEEE Data Port, where Lambert (2020) observes that Twitter data about COVID-19 is easily accessible. The IDs and emotion scores of Twitter tweets on the COVID-19 epidemic are included in this collection. Using the R platform, the experiment's authors applied sentiment analysis to the data through the use of deep machine learning techniques including support vector machines and recurrent neural networks. Sentiment scores for positive (strongly positive, weakly positive), negative (strongly negative, weakly negative), and neutral attitudes were assigned to the Twitter data in this study based on hashtag keywords such as COVID-19, coronavirus, deaths, new case, recovered. The sentiment scores associated with this data are ascertained by applying sentiment analysis to a variety of tweets. Here, twenty tweets are first analyzed. Following that, more than 50 tweets were used to classify 250 tweets, and more than 500 tweets were ultimately categorized into several sentiment value groupings. SVM and RNN were used in an experiment with a sample of 600 tweets. In this case, SVM has neutral tweets while RNN has a maximum positive to total count ratio.

This research article's [8] motto is an analysis of tweets sent by Indian netizens during the COVID-19 lockdown. Tweets categorized as fear, sadness, anger, and joy that were taken between March 23, 2020,

and July 15, 2020 were included in the data collection. Bidirectional Encoder Representations from Transformers (BERT), a novel deep-learning model for text analysis and performance, was used to analyze the data. It was contrasted with three additional models: support vector machines (SVM), logistic regression (LR), and long-short term memory (LSTM). Every sentiment's correctness was evaluated separately. The accuracy of the BERT model was 89%, but the results of the other three models were 75%, 74.75%, and 65%, respectively. The accuracy of each sentiment classification ranges from 75.88 to 87.33%, with a median of 79.34%. In text mining algorithms, this is a really significant value. The results show how frequently related terms and keywords appeared in Indian tweets during the COVID-19 pandemic. The resulting data showed that the BERT model outperformed LR, SVM, and LSTM models with an accuracy of 89%. This program helps medical professionals, the general public, and private workers overcome unfounded fear during pandemics by elucidating popular view on the subject.

Text mining algorithms yield reasonably significant results, with each sentiment categorization having an accuracy ranging from 75.88–87.33% and a median accuracy of 79.34%. The article's [9] findings demonstrate that during COVID-19, keywords and related terms were frequently used in Indian tweets. The results showed that the BERT model outperformed LR, SVM, and LSTM models, with an accuracy of 89%. This program helps medical authorities, the public, and private workers overcome unfounded fear during pandemics by elucidating popular opinion on the subject. An exploratory data analysis was performed on three datasets: the OL tweets, WFH tweets, and covid19 tweets. The Kaggle dataset, which shows the total number of confirmed cases in each country from the start of the pandemic to June, was compared graphically to this data. Using the created datasets, the study examined the trust, fear, and other positive and negative emotions that were expressed in the tweets. Using LSTM and ANN, respectively, an accuracy of 84.5% and 76% was achieved on the dataset of coronavirus tweets classified with VADER.

This paper presents a deep learning method for sentiment analysis of Twitter data related to the COVID-19 review. [10] The suggested technique improves feature weighting by utilizing attention layers and is based on an LSTM-RNN network. Through the attention mechanism, this algorithm makes use of an improved feature transformation framework. In this study, four class labels (angry, fear, joy, and sadness) were used based on publicly accessible Twitter data that was contributed to the Kaggle database. The suggested deep learning strategy greatly enhanced the performance metrics, with a 20% gain in accuracy and 10% to 12% in precision but only 12–13% in recall when compared to the present approaches. This was based on the employment of attention layers with the LSTM-RNN technique. The proportion of positive, neutral, and negative emotion in 179,108 COVID-19-related tweets was determined to be 45%, 30%, and 25%, respectively. This demonstrates how useful, effective, and simple to use the deep learning method for COVID-19 review sentiment categorization has been suggested. This research is limited in some ways. The original dataset underwent feature mapping and feature weighting; the classification results could be impacted by more noisy features or a combination of these qualities.

This study [11] used a machine learning technique to categorize tweets on the Covid-19 epidemic, which is regarded as a worldwide health emergency. Four machine learning classification methods were trained using a cross-dataset technique to accomplish this admirable goal: Support Vector Machine (SVM), Random Forest (RF), Naïve Bayes (NB), and K-Nearest Neighbors algorithm (KNN). The sentiment140 data was used to train the Support Vector Machine, Random Forest, Naïve Bayes, and K-Nearest Neighbors algorithms in an effort to create a general sentiment analysis model that can categorize COVID-19 tweets. Sample COVID-19 tweets were used to test the models, and the IMDB movie review dataset was used for cross-dataset testing. Using a sample COVID-19 dataset, the Support Vector Machine model yielded a True Positive of 81.82%, a True Negative of 74.07%, and an accuracy of 77.55%. The fact that derogatory remarks, inquisitive phrases, and queries could have unforeseen repercussions is one of the work's drawbacks. It is a binary classification that depends on training data and does not include neutral comments. There's a good chance that the categorization—which is only applicable to English—will produce inaccurate results for other languages.

For this study, [12] the tweets of residents in the top 10 impacted nations have been subjected to sentiment analysis. The Sultanate of Oman is one of the other countries selected from the Gulf region. Data collected from people's tweets in the top 10 impacted countries was used in the trials. Over the duration of the study period, 1,305,000 tweets from 11 afflicted nations were collected. Many hashtags, such as #covid-19, #COVID19, #CORONAVIRUS, #CORONA, #StayHomeStaySafe, #Stay Home, #Covid_19, #CovidPandemic, and #covid19, were used in the research. #Coronavirus #COVID, #lockdown, #quarantine, #outbreak of the coronavirus, etc. The tweets were published between June 21, 2020, and July 20, 2020. A sentiment analysis was conducted using the English-language tweets as a basis. Emotions were also shown to change in response to tweets including terms such as "pandemic," "COVID," "virus," "hospitals," "health," "fight," "stay," "safe," "assistance," "emergency," "death," and "masks." This study gave us a useful overview of people's opinions and attitudes regarding COVID-19 and taught us that people thought similarly everywhere. There are two portions to the discussion of the research findings. The first segment covered the opinions that each of the 11 affected countries tweeted. In contrast to Chile and the United States, where attitudes were split roughly evenly between the two, Brazil had 55% positive and 46% negative sentiments. Following India, 55% of tweets from Peru, Spain, and the UK were positive, while 45% were negative. In the Russian Twittersphere, 51% of tweets were positive and 49% were unfavorable. 54%, 49%, and 57% of respondents in South Africa, Mexico, and Oman, respectively, sent positive tweets; 46%, 51%, and 43% of respondents in the same countries sent negative tweets. Oman's rapid turnaround has left most people there feeling optimistic. The emotions connected to the gathered tweets were examined in the second phase. Due to their high rates of recovery, it was found that during this process, the majority of the affected countries had the highest number of tweets with more trust. Because there were more COVID-19 cases than typical, most countries had the highest number of tweets that first expressed alarm. The nation that conveyed the most sense of dread and sorrow was India, where tweets from Spain had the highest anticipation quotient. Moreover, a sizable segment of tweets expressed optimism along with the justification that medical advancements are occurring across several nations.

Political and corporate perspectives both rely on sentiment analysis since it influences how decisions are made. Due to the rapid expansion of COVID-19, it is becoming more difficult to gauge public opinion by examining the emotional content of tweets about the virus. The purpose of this study [13] is to ascertain people's thoughts regarding this topic based on the available material. This may prove difficult given the variety of textual pieces that need to be examined. To get the best sentiment analysis outcomes, this research proposes a deep learning-based method that makes use of random minority oversampling and class label analysis. When working with smaller datasets, this can be useful. Additionally, the model described in this paper combines a number of preprocessing techniques with random minority oversampling and a range of deep learning algorithms, including both traditional and bi-directional deep learning techniques. The performance of various algorithms on sentiment analysis tasks is examined in this research. In summary, bidirectional neural networks outperform regular neural networks by a little margin, with regular neural networks outperforming bidirectional ones by a small margin. The experimental results show that our model performs well, with an F1 measure of 0.92 and a validation accuracy of 92.5%. For this study, the authors opted to use the Coronavirus Twitter NLP-Text Classification dataset. It is divided into two distinct documents: a test document and a training document. The dataset contains a variety of tweets on COVID-19 and user feedback. There are six features in this Twitter data set; however, to allay privacy concerns, user screen names and usernames have been coded. The highest accuracy offered by the GRU and LSTM, using the previously mentioned dataset, are 92.5% and 91.2%, respectively. The original text is usually sufficient to yield reliable findings on classification challenges because of little details in the text. Better outcomes require using a variety of ordered preprocessing techniques in the model. Since class disparity is a major issue in the majority of datasets, it must be addressed before categorization. Should there be a significant variation among the classes, we ought to incorporate resampling methods into our model. Due to the limited size of the dataset, the suggested model uses random minority oversampling; majority under sampling is also an option, but it would require a larger dataset with a lower time complexity. The constrained data for multi-class classification issues was also solved by the authors using class label

analysis. This method improves model predictions for COVID-19 sentiment analysis while maintaining the same fundamental functionality.

Research Gap:

Upon reviewing the literature, it was found that previous studies had investigated how COVID-19 affected people's moods as expressed in their tweets using a variety of machine learning and deep learning techniques.

It was discovered that the following areas or gaps should be the focus of future research, based on the findings of previous studies:

- Additional investigation is required to determine the resilience and suitability of these models in different scenarios due to the validation and generalization of the models over a variety of datasets (e.g., language independent, region independent, etc.).
- It's possible that sentiment analysis's ethical issues — privacy and potential biases in particular — have not received enough attention. Subsequent research endeavors ought to delve into efficacious approaches for reducing prejudices, guaranteeing impartiality, and respecting moral principles when examining delicate material pertaining to pandemics.
- Even though sentiment analysis offers insightful information, further research should focus on figuring out how to properly use this information into public health initiatives. Creating frameworks to convert sentiment analysis results into actionable recommendations for health authorities may fall under this category.
- It's possible that the pandemic's long-term psychological effects on people have not received enough attention. Future research endeavors may entail examining the correlation and potential predictive power of attitudes conveyed in tweets during the pandemic with regards to long-term psychological consequences.

Conclusion:

As a result of this literature study, the complexity of online tweets is illustrated and the diverse field of sentiment analysis during the COVID-19 pandemic is highlighted. The research gaps that have been identified underscore the necessity of adopting a more sophisticated methodology to understand the temporal dynamics of public discourse, attitudes in diverse cultural contexts, and the ethical dilemmas surrounding algorithmic analysis. Its main advantages include a thorough synthesis of the body of content offered and a basic understanding of sentiment analysis, machine learning, and deep learning applications in the particular context of a global crisis. The study highlights the need of interdisciplinary viewpoints and the integration of sentiment analysis into decision-making procedures, contributing to the body of knowledge on the interaction between technology, public opinion, and crisis management. Future methodologies and the resilience of our frameworks for analysis will be strengthened by filling in these gaps, ensuring a more accurate representation of public opinion in the digital age.

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A Systematic Literature Review for Green Parenting

Meera Pandya*
Dr. Jigna Trivedi**

Abstract

If we pay great attention, the bulk of disposable items that come with baby supplies are either made entirely of plastic or include some plastic. These include baby items like powder, lotion, wipes, diapers, toys, milk-consuming bottles, and food pouches for babies packaged in plastic. For just one infant, these things result in an increase in landfill waste. This prompts people to begin thinking critically about green parenting, which is essentially surrounding oneself with a lifestyle that encourages making eco-friendly, organic, and low-carbon generating decisions while purchasing any kind of goods. In this review paper, insight is provided for such eco-friendly parenting practices by gathering, summarizing, and reviewing the multiple articles available from Emerald and EBSCO research paper journals. The available literature is gathered and summarized using a systematic literature review approach in order to identify any gaps in the body of knowledge.

Keywords: Systematic Literature Review, Green parenting, Eco-parenting, Green parenting behavior, and Factors influencing green parenting

Introduction

Parenting aims to teach kids the morals and lessons they will need to become responsible, productive adults. Lack of conservation efforts coupled with excessive use of natural resources has resulted in major environmental issues like global warming and air, water, and land pollution. Due to the widespread usage of plastic products and other non-biodegradable and difficult-to-decompose materials, such as electronics, landfills have become overflowing with rubbish. It has been observed that during the baby's first three years of life, the parents spend about Rs. 60,000 on disposable diapers alone, resulting in an astonishing accumulation of used diaper trash in municipal rubbish pits. According to popular belief, a newborn baby needs to change 8 to 10 diapers on average every day throughout the first few months of life. Changing up to 550–600 diapers in a baby's first three months. A single nappy can take up to 500 years to degrade fully, which is hard to fathom and this places it as the third most common consumer product in landfills worldwide. If we look closely, the majority of throwaway things included with infant supplies are either manufactured entirely of plastic or contain some plastic. These include diapers, baby food pouches, toys, milk feeding bottles, and plastic packaging for baby products like powder, lotion, wipes, and diapers. These items add up to more waste in landfills for only one baby. According to a report by research and markets, branding businesses have seen these prospects and believe that this market sector will grow to \$26.35 billion between 2021 to 2025. Johnson & Johnson, Himalaya, P & G, Unilever, Me & Moms, and Nestle were the leading companies in this infant products market.

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This paper focuses on bringing the literature together based on studies conducted for “Green parenting”. Many studies have mentioned the word ‘naturalness’, ‘eco’, ‘environmental concern’, and ‘green’ in their papers. In this paper, they are considered as synonyms.

Research objectives

- To summarize and analyze previously published work on ‘Green parenting’ using keywords like ‘green parenting’, ‘eco parenting’, ‘green parenting behavior’, and ‘factors influencing green parenting’
- To sort and select papers that fit closely to the topic of green parenting for future research
- To identify gaps in the currently available literature
- To extract crucial details from existing literature

Research Methodology

In order to achieve the study's goals, relevant research was found using a step-by-step procedure, after which they were analyzed. Publications on green parenting that were published in scholarly journals between the years 2012 and 2022 were chosen. Here, to find research papers on the chosen topic, keywords like "Green parenting," "eco-parenting," "green parenting behavior," and "factors influencing green parenting" were used. The following research journals were selected to source the required research papers:

- EMERALD
- EBSCO

Keyword	Emerald	EBSCO	Total
Green parenting	293	23	316
Green parenting behavior	236	64	300
Eco-parenting	64	2	66
Factors influencing green parenting	223	2	225
Total	816	91	907

(Table 1: Research papers found in Emerald and EBSCO for the selected keywords)

Early articles, book parts, and newspaper sources were also included in the search results below; however, newspaper sources were excluded in order to preserve the integrity of the main research. The research papers from these search results were then selected after removing the other papers on the basis of criteria like, Duplicate search, Title relevance, Abstract relevance, and full article reading. Thus, in the following manner, the systematic literature review process was carried out for green parenting, which is explained in detail in the literature review part.

Literature review

Removing the duplicate papers

Based on the total available 907 papers, the collected research papers were examined for duplication and relevancy. There were 741 articles overall after the removal of 103 duplicate Emerald articles. To keep the data restricted to research papers and book articles exclusively, EBSCO had a few newspaper articles and

sources that were not chosen. Thus, the total number of articles left in EBSCO was 64.

Journal	Total articles	Duplicate	Total relevant
Emerald	907	103	741
EBSCO	91	27	64

(Table 2: Sorting research articles based on duplicate articles)

Selecting papers with relevant titles

Based on the available article database, the research papers were then evaluated based on their 'Title' of paper. Even though the title may not contain the exact word 'green' or 'eco', the papers were so selected that they have a meaning of environmental consciousness or such synonym in their title. Out of a total of 741 articles, 24 were selected from Emerald, and 12 were selected from EBSCO. The titles that are pertinent to parenting techniques, children's environmental awareness, and parents' environmental awareness served as the basis for these filters.

Journal	Total articles	Research papers with not relevant title	Total relevant research papers
Emerald	741	717	24
EBSCO	64	52	12

(Table 3: Removing research papers title that are not relevant)

Abstract reading

The research paper's significant data, such as the abstract, research objectives, research hypothesis, theories that may have been utilized, and other information, was filled out using Microsoft Excel. Based on the abstract reading, the research publications that have a meaning related to green parenting or parenting practices were chosen at this stage. Out of the 24 articles in Emerald, a total of 14 were chosen. Similarly, all 12 papers were pertinent from an abstract perspective for EBSCO research papers.

Journal	Total articles	Not abstract relevant	Total articles with relevant abstract
Emerald	24	10	14
EBSCO	12	0	12

(Table 4: Selecting research papers based on relevant abstracts)

Theoretical framework

7 out of the 14 publications from Emerald that were chosen for analysis had a theoretical foundation for their research. This includes the Theory of planned behavior, Socialization theory, Critical social theory, Occupational theory, Communities of practice theory, Resource theory, and Douglas' theory. On the other hand, EBSCO had a lot of qualitative studies and thus, the total number of papers that had theoretical background were 5 out of 12 research papers. The theories mention for EBSCO research papers were, Self-perception theory, Values-socialization theory, parental acceptance-rejection theory, Practice theory, Gender theory, Parental investment theory, and Skinner's theory. The list of theories used and their description is as follows:

Theory	Description
Theory of planned behavior	In order to forecast a person's intention to engage in a behavior at a certain time and location, the Theory of Reasoned Action (TRA) was renamed the Theory of Planned Behavior (TPB) in 1980. The hypothesis was developed to describe all actions that people can exercise self-control over. This model's most important element is behavioral intent, which is impacted by attitudes toward the likelihood that a behavior will result in the desired end and a subjective assessment of the risks and advantages of that outcome.
Socialization theory	Individual behavior is shaped by gender expectations in relation to the cultural context.
Critical social theory	In an effort to rethink and reform Marxist social criticism, critical social theory typically rejects conventional political and intellectual viewpoints, criticizes capitalism, advocates for human freedom, and as a result seeks to expose injustice and control in all of its manifestations.
Occupational theory	Occupational therapy theories are informed by conceptual models and frames of reference, which provide occupational therapists with the framework and clinical reasoning necessary to guide treatment.
Communities of practice theory	Adapted to promote collaborative practices to strengthen and develop co-produced community research.
Resource theory	This is a theory of social exchange or a social psychological framework to understand the relationship between individuals' resources and social interactions that leads to the development of relationships between them at micro and macro level regularly.
Relative theory	This theory talks about the various tangible and intangible resources possessed and used by individuals, including children, in a family setup to influence each other, and the family consumption decisions.
Douglas' theory	According to this view, naturalness is a method of purification that preserves social order by sustaining the infant's value.
Self-perception theory	This theory says that an attitude develops basically through observation of one's own behavior
Parental acceptance-rejection theory	Parental acceptance-rejection theory (PARTheory), a theory of socialization and lifespan development based on empirical data, aims to predict and explain the main factors that influence interpersonal—particularly parental—acceptance and rejection in the United States and around the world.
Practice theory	According to practice theory, social interaction is a useful activity. Social practices can be characterized as routine behavior that combines aspects including physical expertise, material possessions, technology, perceptions, and emotions. Practice theories concentrate on how these components are knitted together by human activity. They emphasize practical understanding, the integrated ways in which people comprehend what and how to do next in a circumstance while acknowledging the role that material items play in substituting.
Gender theory	In any particular setting, group, society, or area of study (including, but not limited to, literary works, history, social science, education, applied the field of language, spirituality, medical sciences, philosophy, social studies), gender theory is the study of what is perceived as masculine, feminine, and/or queer behavior.
Skinner's theory	According to the learning theory of behavioral psychologist B. F. Skinner, after being exposed to a stimulus that elicits a response, a person is then reinforced for that reaction. This ultimately results in the conditioning of human behavior.

(Table 5: Description of different theories highlighted in research papers)

Reading full article

Out of the remaining 26 articles both from Emerald and EBSCO, all the research papers were read thoroughly. Very few research papers were deemed to be related to the topic of "green parenting" after reviewing the entire texts of the publications. From EBSCO, not a single paper that was connected to green parenting was produced. Only one paper from Emerald was discovered to be directly relevant to green parenting. This can be viewed as a restriction on the amount of literature available on the subject of green parenting. As a result, finding additional literature on this subject will be made easier using the reference list of the chosen publication.

Key information from the selected research paper

'Naturalness as a safe haven: Parental consumption practices and the management of risk' is the research article that was chosen based on the systematic literature review on the subject of green parenting. The authors of this study have utilized the word "naturalness" rather than specific terms like "eco parenting" or "green parenting" to describe their own and their children's choices concerning consumption. The idea of naturalness, which parents frequently referred to in this research paper is to describe their attempts to embrace the cultural fundamentals of parental accountability for addressing risk, is the topic of interest.

Parents view naturalness as having three distinct components: familiarity, purity, and culture. Parents view naturalness as having three distinct components: familiarity, chastity, and culture. Different parental consumption behaviors are influenced by these three factors. Finally, this study contributes to the body of literature by examining how naturalness functions as a purification tactic that preserves social order by sustaining the infant's value utilizing Douglas' concept of purity and risk. This theory discusses how naturalness is a method of purification that preserves social order by sustaining the infant's value.

Research Gap:

- The examination of the literature that follows revealed that there are very few pertinent research studies on this topic and that too in India, and more specifically Gujarat.
- The majority of studies were qualitative and descriptive in nature
- Only a small number of specific papers on green parenting were located after carefully choosing the papers that were relevant.
- There were very few studies that suggested a model and based their research on a theory.

Conclusion:

This article thoroughly reviews and evaluates publications and research on green parenting based on a number of different journals. Research on green parenting is diverse in nature, as seen in different research papers, such as different parenting styles, risks associated with parenting, parenting consumption patterns, parental purchase behavior, the influence of a child on purchase behavior, and what defines a good child. Additionally, it was discovered that most publications lacked adequate theoretical grounding. Only one such relevant paper was found to be studied for green parenting. As the available database is very small, the references of that particular research paper will be used for further studying the topic.

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“A Study on Factors Influencing the Decision to Purchase Consumer Durable Goods Hyderabad”

Dr. Muthe Srinivas*

ABSTRACT

The consumer durables market is going through a lot of changes in the last few years that is the reason according to The report of the Indian Brand Equity Foundation, consumer durables market in India is expected to rank 5th globally as a result of 2025. During the consumer durables marketplace, consumer's activity for acceptance of goods changes more. This is due to the shifts in the marketing strategies of the both the modifications and the marketers in the cultural and social and components of the environment. Therefore, a thorough analysis of consumers' conduct in regard to customer's durables is required. Consumers are always looking for the best solution for their satisfaction. Therefore, they always try to look for new sources of meet their requirements in the best way potential. Customer conduct is the examination of the actions of consumers previous to buying a product, on the point a buying a product with following buying a product. In this research, we will analyse the aspects that influence the acquisition of the following durable consumer products: Refrigerator, TV, electric fan, and cell phone.

Key words: consumer durable goods Pre-purchase behaviour, customer behaviour, Indian market, and consumer durable goods.

INTRODUCTION

The process of making a purchase based on a variety of cognitive and affective elements, such as the following: Observations kin and companions Promoters exemplary models Situations and emotions.

Consumer decision making is the process by which a consumer makes a decision to purchase a product or service under the impact of several variables such as relatives, friends, advertisers, and so forth. The decision-making process a buyer goes through when purchasing a product involves three important phases. These are the effort stage, processing step and the final step. First and foremost, the input stage most important moment when consumers are impacted by outside variables. One significant aspect at the input stage is the psychological factor. Because the degree to which certain factors impact customers varies. In the second step, known as the process stage, the customer looks for information about different products and label alternatives after realising they need the product. Its brand is evaluated for different brands of products. These two stages relate to consumers' pre-purchase behavior. There are five phases in the complicated decision-making model: identification of the need, gathering data, weighing options, making a purchase, and evaluating the choice thereafter. Pre-purchase behaviour, then, include identifying needs, gathering information, and weighing options. Purchase actions and post-purchase evaluations belong to the exit phase. This chapter presents the pre-purchase selection process behavior of households regarding mobile phones, electric fans, televisions with refrigerators.

Factors that influence consumers to search for information during the product purchasing process are separated into four categories: public, commercial, experiential, and personal sources. Commercial sources in this case include sellers, advertising, the internet, packaging, and displays. Depending on the kind of goods, these elements have different proportional influences, and these influences differ from person to person. Therefore, consequently, we may say that making pre-purchase decisions behavior belongs to the consumer behavior. Customer behavior is how consumers behave before purchasing, as well as during and following a purchase an item or service. Research on consumer behavior comprise

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how consumers recognize a require for a product and service, search for information about that good or service, weigh your options, and decide whether to buy the goods knowing that you won't be disappointed when you utilise it later. In light of that, factors influencing consumer purchasing decisions can be divided into elements that are commercial and non-commercial. The elements that marketers create are known as business factors. These variables may include the product itself, the cost, the company's different marketing initiatives, etc. Non-business variables are any elements that are not related to business. Friends, neighbours, and parents' influence are examples of non-commercial elements. Consumers purchase things because of the combined impact of commercial and non-commercial forces.

REVIEW OF LITERATURE

According to Thangasamy and Pakitar (2014), in order for marketers to comprehend how consumers make judgments about what to buy, they must first determine who the decision-maker is. Additionally, marketers need to be on the lookout for different kinds of purchasing choices. The choice that customers make while buying a cricket bat, soap, television, or new car will differ. The study on variables influencing customer purchasing behaviour was carried out by the authors. **Similarly, Daljord (2014)** conducted research on the price skimming strategy of durable goods, in which the price of durable goods decreases over time. Thus, consumer durables are associated with fluctuations in price, quality and demand over time.

Priyanga and Rajarajan (2013) The choice of the researcher to perform the current investigation was informed by a review of earlier studies. Critical areas that need further attention were considered in this analysis and compared to the previous one. Customer behaviour and home appliance items can thus be considered as an individual's purchases and use of products and services, where these selections are a reflection of the consumer's lifestyle. Consumer behaviour and attitudes towards refrigerators, induction cookers, mixer grinders, wed grinders, kitchen stoves, and microwave ovens were studied.

Sharm (2013). Consumer buying behaviour regarding home appliances was analyzed in a studied the study's main goals were to learn about the factors that influence purchasing decisions and the purchasers' decisions in the event that their preferred brand was unavailable at the time of purchase.

Anil kumar and Jelsey Joseph (2012) analyzed the patron buy behaviour of city and rural operating women purchasers toward durables and opined that the city and rural markets considerably differed from every different in thinking about widespread and product-unique elements even as making their buy selections for durables. The alternate of patron mind-set and options has been happening over the sector for the beyond some years specifically with inside the white items market. The access of overseas manufacturers created a heavy competition. Every marketer is confined to discover the elements for which the consumers are giving greater significance and their pride degree also. Without such an understanding, entrepreneurs discover it tough to fulfill the customer's desires and wants.

Gowrisankaran and Rysman (2012) Consumer durables are associated with their dynamic characteristics. The dynamic behavior of consumer durables includes price, quality, demand dynamics, etc. Highlight the changes in price, quality, and demand of durable goods. New products introduced in the market, taking into account reasonable expectations and heterogeneity in consumer tastes and preferences. This study estimates a model of the digital camcorder industry using panel data on prices, features, and sales volumes of various items in this industry and finds that the likelihood of reacting the temporary price shock to the industry is higher in one month than in one year. For many consumer durables, two equally important things are what to buy and when to buy, with the hope of benefiting from more dynamic prices and quality for these goods. When consumers buy these types of goods, they are always committed to finding new and improved products in the hope of being able to replace them in the near future. It is the dynamic behavior of consumers towards consumer durables.

Mahsa and Hossein (2011) in their study verified the influence of extension attitude onto brand image, although initial brand association and perceived compatibility between new items and other commodities or brand image can increase consumer's attitudes. Additionally, the article clarified that, once the extension process is completed, the beginning picture is the only important factor impacting the final image.

Lakshminarasimha (2011). When it comes to consumer durables and other high-value purchases, decisions are made in families, with different family members playing different responsibilities. Information gatherers look for a variety of data, influencers shape decisions, and decision makers make decisions like whether to buy or not to buy, which brand to buy, where to buy the items, and when to buy them.

According to Kotler and Armstrong (2007) looked at the variables influencing the purchasing decisions of customers. Physical, social, cultural, and personal aspects were determined to be the main determinants of consumer purchasing behaviour among all the other categories. Since it's not ideal for customers to spend more than they have, personal elements like employment, financial status, and motivation become typical considerations.

Chamhuri and Batt (2007) Research on the primary factors influencing consumers' choice of fresh meat retail establishments was also carried out by. Eight themes were found to have an impact on participants' decisions to purchase at traditional or modern retail establishments. Convenience, positive relationships with retailers, high-quality meat, competitive pricing, freshness, assurance, product diversity, and shopping atmosphere were the eight themes that were found.

In a similar vein, Solomon et al. (2006) noted that when we examine consumer behaviour in the context of consumer behaviour motives, we become aware of its complexity with reference to choice. Aspiration ideals often serve as the foundation for consumer incentives. Furthermore, customers frequently lack awareness that their conduct in evaluating products is an expression of who they are and who they aspire to be, and they are rarely willing to express these underlying wishes.

Losarwar (2002) made an effort to investigate the impact of a selection of five durable products—a television, a washing machine, a refrigerator, a mixer, and a fan—as well as the role that family and social groups play in society, lifestyle choices, brand awareness, and factors that influence purchasing decisions. According to the study's findings, most customers bought their refrigerator, washing machine, and television from licenced dealers while buying their mixer and fan from stores. The company's commercials, standing, cost, and product calibre were a few of the elements that affected consumers' decisions about durable goods. The study found that the contemporary market is both transitional and extremely competitive. Because of this, consumers play a significant role, and marketers should take into account the actions and mindset of prior to releasing the goods into the market, of the customers

Kotler (2000) bring of luminosity that product as a main subject in manufactured goods plan. As the product is simply division of the product, the communication strategy employment towards revealing the product and generate brand image.

OBJECTIVE OF THE STUDY

1. The goal of the study is to identify the variables influencing consumer durable goods purchases. To determine the elements affecting a decision to buy

RESEARCH METHODOLOGY

To achieve this purpose, the study was conducted in the state of Hyderabad. Rangareddy district and Hyderabad Metropolitan district have been selected as the two districts. A field study was conducted using

a sample of one hundred residences and a survey schedule. Once more, 100 households were divided into two quotas, with 50 Percentage of the sample coming from the Hyderabad municipality and 50 Percentage from the Rangareddy district, according to quota sampling. The investigation period for this research was June 2021–July 2022. The study was conducted in Hyderabad Capital and Rangareddy District, with households selected at random from the assigned sites. The main analytical methods are simple percentages and the Garrett ranking methodology.

RESULTS AND DISCUSSION

Need identification is the initial stage of the purchase decision-making process. A product's demand might be identified for a variety of reasons. In the current study, elements like luxury, comfort, and necessity are used to identify needs.

The motivations for the purchases of electric fans, televisions, refrigerators, and cell phones are determined using a straightforward method. To learning the acknowledgment of the require to purchase preferred supplies, three factor were considered with they be essential used for being, comfortable existence and comfort life. Thing affecting the perceived require purchasing durable consumer goods sampled by households:

Table-1

Factors	Cellular Phone	Electric Fan	TV	refrigerator
essential for life	92%	94%	90%	60%
want life to be comfortable	0%	6%	1%	15%
To have luxury of life	8%	0%	7%	6%
Total number of households not possessing	100%	100%	98%	81%
Total number of households not possessing	0%	0%	2%	19%

Source: Primary data

As per cellular phones, 92% of all family buys them since they think cellular phone are essential used for life and simply 8% of family buy them toward meet the needs of a luxurious life. For electric fans, 94% of family buys them since they saw them as an essential component of existence and 6% of family buys them to create life more relaxed. Regarding TV, 90% 1% of households think it makes life more convenient, 7% think it's a high-end product for life, and 6% of families think it's a required product for life. In terms of refrigerators, 60% of households purchase them because they view them as essential products for daily living, 15% do so for convenience, and 6% view them as luxury purchases. Therefore, it may be said that the majority of families who own certain items view them as essential to existence.

Several scholars have determined the elements influencing consumer behaviour. Demonstrates how a person's personal, social, psychological, and cultural characteristics may influence how they interact with consumers. Outside events and corporate marketing campaigns are the two main factors impacting the consumer decision-making process at the input and process phases. Not related to sociology. As a result, they include aspects like price, accessibility, social class, neighborhood, family, and cultural characteristics.

Table 2 Using Garrett scoring, elements are ranked according to how much of an impact they have on a mobile phone buying decision.

Factors	Total score	Avg score	Ranks
Revenue	6856	68.56	2
family decision	6243	62.43	3
The impact of a neighbor	2679	26.79	12
A relative's impact	4801	48.01	9
Influence of friends	5472	54.72	5

Promotion within	4920	49.2	8
Variations in price	4481	44.81	7
Period of guarantee and warranty	3936	39.36	11
Discounts and offers	5674	56.74	6
Modern technology advancement	5591	55.91	4
New brand introduction in the market	4358	43.58	10
according on necessity	6433	64.33	1

Source: Primary data

Table 2 shows to the demand for cellular phones are the most decisive issue in purchasing. Households once more view income as the second most influential factor, then judgments made by the family and technology upgrades, peer impact, savings, and deals, and cost changes. Advertisements from different sources the impact of family, the launch of a new brand, modifications to the warranty or its duration, and the least important aspect when choosing to purchase a mobile phone The neighbours' influence is the sampled household's effect.

Table 3 Ranking of factors as per their influence on the purchase decision of Electric Fan using Garrett ranking

Factor	Total score	Avg score	Rank
Revenue	6443	64.43	3
family choice	6195	61.95	2
The impact of neighbours	4095	40.95	10
The impact of relatives	2952	29.52	12
Influence of friends	3685	36.85	11
advertisement with a range of prices	4713	47.13	8
Promise and assurance	5045	50.45	5
Rebates and promotions	4605	46.05	9
Technological advancement	4976	49.76	6
launch of a new brand	5385	53.85	4
according on necessity	4159	41.59	7

Source: Primary data

Table 3 shows to the need to use electric fans is ranked first, this is the factor that most influences the decision to buy electric fans. The second the majority influential thing be the familial choice, then wealth, and technology upgrades, value fluctuations, reduction with incentives, new product introductions, advertising on a variety of resource, change in guarantee period and warranty, pressure of neighbors, The least important aspect when deciding whether to get an electric fan is the impact of acquaintances.

Table 4 Ranking of factors according to their impact on television buying decisions

Factor	Total score	Avg score	Rank
Revenue	7566	75.66	1
family choice	7122	71.22	3
The impact of neighbours	4565	45.65	8
The impact of relatives	3692	36.92	10
Friendship influence:	3123	31.23	12
Promotion in different	4924	49.24	7

Variations in price	5254	52.54	5
Changes in warranty and guarantee periods	4241	42.41	9
Rebates and promotions	5645	56.45	4
technological advancement	5246	52.46	6
launch of a new brand	3725	37.25	11
according on necessity	7292	72.92	2

Source: Primary data

Table 4 it has been shown that family and wealth have the greatest influence on television purchases needs, decisions, reduction with incentives, value fluctuations, upgrading technology levels, and advertising. Reports from a variety of sources, the impact of neighbours, modifications to the warranty and its duration, the influence of family members, the launch of new brands, and last but not least the effect of friends

Table 5 Ranking of factors in order of relative importance on refrigerator purchasing choice

Factor	Total score	Avg score	Rank
Revenue	7574	73.74	1
Family choice	6631	66.31	3
The impact of neighbours	3692	36.92	8
The impact of relatives	3754	37.54	9
Influence of friends	2523	25.23	12
advertising across a range of media	3238	32.38	10
Variations in price	5315	53.15	5
Changes in warranty and guarantee periods	4263	42.63	7
Rebates and promotions	5594	55.94	4
technological advancement	5243	52.43	6

Source: Primary data

Table 5 shows that for refrigerators, purchasing decisions are mainly influenced by income and ranked first, followed by needs, family decisions, discounts and incentives, price variations, upgrades technology, warranty changes and warranty period, influence. Neighbors, influence of relatives, advertising from different origin, the debut of new brands and friends' influence is the least significant component.

Thus, it can be said that the household's income level has a major impact on the decision to purchase a refrigerator or television. The need for the goods is the deciding element when it comes to buying electric fans and cell phones. Both commercial and non-commercial variables are included in the list above. However, it is difficult to tell whether non-commercial or commercial variables have a greater impact on purchase decisions based on respondents' replies to each product. However, both commercial and non-commercial variables have a combined effect on household purchasing decisions.

CONCLUSION

This study looks at family decision-making processes prior to purchases. over the course of two selected districts of Hyderabad city used for buy cellular phones, electrical fans, and televisions with refrigerators. The study's findings indicate that cell phones, electric fans, televisions and refrigerators are not consider lifetime luxuries but are considered essential supplies through the preponderance of model family. Revenue is the mainly influential a component of the decision to buy televisions and refrigerators of households in the sample, other than for cellular phone and electrical fans, the mainly influential cause is demand that is households are model with the most important needs. a mobile phone and an electric fan in making purchasing decisions.

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Gender Diversity and Women Empowerment for Sustainable Development of Mankind – A Case Study

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Abstract:

Gender Diversity in terms of equal opportunities to all is essential to achieve inclusive growth and sustainability. While achieving balanced sex ratio to have balanced biological composition of population, it becomes necessary to provide equal socioeconomic opportunities to all. Measurement of degree of human development and taking necessary steps to ensure sustainable development is essential. The Millennium Development Goals and the Sustainable Development Goals announced aimed at setting the targets to be achieved by all the countries of the world.

In India, since 2001, sex ratio started moving in favour of female population bringing about more balanced composition of population. Therefore Gender Equality can only ensure growth in an inclusive manner. India's achievement till now regarding gender diversity is far below the target.

The current paper considers that initiatives may be taken by small entrepreneurs also to improve the situation. This paper intends to refer to a case of a food delivery business started in Kolkata with a social objective of providing jobs to distressed female workers at a small scale. Positive socioeconomic benefits were expected to result from the initiative. The paper shares the experience gained which does not refer to the success of the business only.

Key Words: Gender Diversity, Development Goals, Acid Victims, Sustainable Development.

Introduction

Gender Diversity – the concept has its origin in the concept of Gender Equality/Inequality with respect to socioeconomic opportunities, to a segment of population belonging to a specific gender. It is essential for any country to achieve balanced sex ratio so as to have balanced biological composition of population. In absence of gender equality, inclusive growth cannot take place in any country as a major section of population will remain excluded from developmental activities/actions.

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Problem Statement

Gender Diversity is needed for inclusive growth of a country. On the other hand gender inequality may result in deprivation, humiliation and violence against people belonging to the minority group irrespective of their age. In the human society usually we observe lack of opportunities as well as participation in economic activities for the female population compared to the male population.

Measurement of degree of human development in various countries over time indicates the gaps and needs for taking initiatives further in different directions. Human Development Reports of UNDP, World Development Reports (published annually) help to have comparative ideas in this regard. The eight Millennium Development Goals announced in the year 2000 for achieving during 2000-2015 were:

Eradicate extreme poverty and hunger

Achieve universal primary education

Promote gender equality and empower women

Reduce child mortality

Improve maternal health

Combat HIV/AIDS, malaria and other diseases

Ensure environmental sustainability

Global partnership for development

The above announcement addressed the needs of the poor which were agreed by all the countries and development institutions of the world. The world development agenda for the next 15 years were announced through the announcement of 17 Sustainable Development Goals in 2016. It is a movement to call all the nations to work for promoting prosperity while protecting the earth through global partnership. Following are the goals which stress on the equality irrespective of gender, ensuring fulfilment of basic human needs for all, achieving prosperity for the planet and protecting the earth also.

1. No Poverty
2. Zero Hunger
3. Good Health and Wellbeing
4. Quality Education
5. Gender Equality
6. Clean Water and Sanitation
7. Affordable and Clean Energy
8. Decent Work and Economic Growth
9. Industry, Innovation and Infrastructure
10. Reduced Inequalities
11. Sustainable Cities and Communities

12. Responsible Consumption and Production

13. Climate Action

14. Life below Water

15. Life on Land

16. Peace, Justice and Strong Institutions

17. Partnerships for the Goals.

We get an annual report of how the nations are implementing the SDGs which get published by the United Nations Department of Economic and Social Affairs after getting inputs from international and regional organisations.

The major objectives of the targeted interventions under the above initiatives were mainly to eradicate extreme poverty, achieve gender equality by empowering women, improve health, maintaining environmental sustainability and heading towards a more sustainable growth of the mankind.

While considering the 5th SDG of achieving Gender Equality, we find all the previous four SDGs are highly connected with the specific 5th developmental goal. It is essential to provide the support to the entire population that is to both males and females to eradicate mass poverty, hunger and ensure spread of education and health for the people of a country.

In India, since last 2001, sex ratio started increasing in favour of female population as evident from the fact that the sex ratio became 940 females per 1000 males as per the 2011 Census compared to 933 females per 1000 males according to 2001 census. The female population has been gradually approaching half of the total population of our country. Therefore Gender Equality can only ensure growth in an inclusive manner for the entire population.

India's target regarding gender diversity in work place is far from being achieved as evident from the fact that women population constituted 26% of Indian workforce across sectors whereas the target was to have it more than 31 %. This has been shown by a survey of 775 companies across sectors, carried out by Aon (The Economic Times, 8.3.22). Further women are to be there not only to hold any position in the company but to hold the positions from where they can take part in decision making. Increase in the number of women in decision making position enhances the confidence and motivation for self-development of the rest of the women population in a country. Sometimes this kind of presence of women executives in the decision making positions has been termed as 'Board room diversity'. In India, a progress in 'Board room diversity' has been observed as it has increased from 6% in 2014 to 18% in 2022 among Nifty 500 companies. But the growth rate is very slow as it has grown just by 1% per year over the last three years. (Times Business, 7.12.22).

Table 1: Share of Directorships held by women in Nifty-500 companies (in %)

Year	Directorships held by women (in %)
2014	6
2015	11
2016	12
2017	13
2018	14
2019	15
2020	17
2021	17
2022	18

Source: Times Business, 7.12.22

The important question rose regarding bringing gender diversity in many countries is whether the companies should follow the principles of voluntariness or there should be the introduction of laws to make the workplace more diverse. There are arguments in favour of as well as against it. While critics say that compulsion may introduce inefficiencies in the work place the supporters say that making the work place diverse through introduction of quota will motivate the women population to pursue education and develop leadership potential (ILO, Women in Business and Management). This motivation is also expected to help eradicating another serious social problem of gender based dualism in the labour market.

Our recent experience during the last Pandemic showed the severity of impact of gender inequality on the female population. During COVID Pandemic, it was observed that the women population affected more than the male population. Women were already less in number in the workforce. Therefore in terms of percentage, higher percentage of female population lost their jobs than the male population which was aggravated by the fact that some sectors (as tourism/hotels) where women population was engaged more in number was hit by the pandemic more. Here comes the need for skill development and diversification of job opportunities for the female population also.

Therefore, women empowerment, motivating women population for self-development, creation of socio-economic opportunities for women are the basic needs for more inclusive and sustainable development of a society.

The current paper considers that there should be initiatives taken by small entrepreneurs also to improve the situation by providing job opportunities to the females, especially more to the females in distress.

We now intend to refer to a case of a food delivery business started in Kolkata in 2018 with a social objective of providing job opportunities to female workers at a small scale. The business was started by one of the authors of this paper. Initially, going one step further, the organisation started its operation with three female workers who were the victims of acid attacks.

The basic idea of the business was derived from three business models of the

- 1) Mumbai Dubbawalas, the business format which has been successfully delivering food to office employees in lunch boxes regularly for more than hundred years,
- 2) Swiggy, which runs a food aggregator's business with independently driven fleet of delivery personnel and
- 3) Sheroes Hangout which was opened in Agra in December, 2014 as a crowd funding project by a group of acid attack survivors.

The business under consideration initially aimed at delivering food to office executives in specific areas of Salt Lake and Newtown office areas of Central Kolkata after preparing the food at a specific hired location with the help of acid attack survivors (female workers) along with some normal manpower to support them. Accordingly it started its operation in 2017.

Literature Review

The faculty and staff of Avon Global Centre for Women and Justice and Cornell Law School International Human Rights Clinic students conducted fieldwork in Bangladesh in December 2009, in India in January 2010 and in Cambodia in March 2010 and in their report on 'Combating Acid Violence in Bangladesh, India and Cambodia' (2011) they examined acid violence in Bangladesh, India and Cambodia from an international human rights perspective. The report identifies gender inequality as one of the root causes of such inhuman activity of acid attacks.

Christine Lagarde, the Managing Director, International Monetary Fund spoke in her speech on 'Empowerment-the Amartya Sen Lecture' on June 6, 2014 about two types of obstacles to personal empowerment - namely the obstacles based on income disparities and obstacles based on gender disparities. She said inequality can hinder individual empowerment and it also hinders sustainable economic growth. Her lecture note says that globally, women earn only three-quarters as much as men, even with the same job and same education. Women are underrepresented in the formal sector and overrepresented in the informal sector. Women are also observed less holding the leadership positions, where gender seems to matter more than qualifications.

Yousuf (2020) in an article says acid attacks on women are reported from different countries like the United Kingdom, South Africa, Saudi Arabia, Cambodia, China, United States, Iran, Bangladesh, Pakistan, Nepal, including India. Violence against women and girls remains predominant in all forms and most of the time it remains under-reported. According to USA, around 250-300 acid attacks are being reported every year in India in spite of such under-reporting.

Since it is an important fact that women empowerment will benefit business, society, and a nation as a whole, it is expected that individuals as well as communities shall give their effort to empower the women to ensure sustainable development of a country.

Research Methodology

The current research work intends to follow a descriptive research methodology using secondary data and information from articles, journals and books as well as the first-hand personal knowledge and experience

gathered through conducting a business of delivery of food in the city of Kolkata. This case study is one of learning the genuine needs of a social class of people who became the victims of anger of the people of other gender for regaining their self-esteem, dignity of life and socioeconomic strength.

Objectives of undertaking the particular format of the Business:

It is true that the basic objective of any business is to generate earnings. In addition to generate earnings, the particular business of Kolkata had the aim of deriving positive economic and social benefits through launching a cookery enterprise with acid attack victims. More elaborately, the objectives of launching a cookery enterprise with acid attack-victims were:

- 1. Economic Empowerment:** Economic empowerment of the acid attack survivors by offering job options. A source of earning to such people will help them to support their families and themselves and thus bring prosperity to the local economy.
- 2. Social Rehabilitation:** This enterprise would give acid attack victims a place to congregate and interact, which might help them regain their self-esteem and sense of belonging.
- 3. Creation of Social Awareness:** Raising awareness and advocating for stricter laws and regulations to stop acid assaults in the future were two things that could be done with this business.

The future apprehensions associated with such a business were also there as follows:

- 1. Limited Market:** Due to consumer reluctance to buy food produced by acid attack survivors due to concerns over partial physical illness, the market for such a business may be limited.
- 2. Stigma:** Despite campaigns to increase awareness, survivors of acid attacks may still be subject to stigma, which could harm public perception of the company and restrict its expansion.
- 3. Skill and Training:** Additional training might be required to guarantee that the quality of the food and service is of good quality, depending on the experience and abilities of the acid attack survivors hired.

In general, the company had the ability to improve both the lives of acid attack survivors and the neighbourhood. However, it was crucial although not impossible.

The challenges initially faced in running the business were mainly:

- i) the difficulty for the female employees (the victims of acid attacks) to attend the place of work regularly and side by side attend the courts to fight their legal cases against the attackers and get justice.
- ii) the difficulty of the victims to come out of the trauma they had gone through in their past life.

Some of the female workers (the victims) discontinued their work and were replaced by some normal female workers with little education for whom it was difficult to get any other decent job in the society. The challenges faced by the organisation were there at the initial stage. The owners started with a noble mission of helping physically and mentally challenged group of people by providing opportunities to earn to run their livelihood. But it was understood that a joint effort of multiple social authorities along with Govt. efforts is essential for the all-round success of such an initiative.

Why did it fail in initial stage?

Here are some potential reasons why the cooking business with acid attack victims in Kolkata did not work out:

- 1. Insufficient market demand:** There may not have been enough interest in the goods or services that the specific Kolkata culinary company supplied. The success of any firm depends on conducting in-depth market research and comprehending the tastes and demands of potential clients.
- 2. Limited visibility or reach:** The particular company might not have been able to properly contact its target market or raise enough awareness of its offerings. Low visibility may have been the result of insufficient marketing or promotional activities, which may have had an effect on the performance of the company.
- 3. Operational challenges:** Managing a cooking business' daily operations, such as obtaining materials, upholding quality, guaranteeing prompt delivery, and managing logistics, was difficult due to absence of a sound supply chain system which requires further investment and human support.
- 4. Financial limitations:** Operating a business requires sufficient financial resources, including start-up money, running costs, and managing cash flow. Due to financial challenges including insufficient finance or bad financial planning, the company's operations and potential for expansion may have been hampered.
- 5. A lack of collaborations or partnerships:** Relevant stakeholders, such as community groups, non-governmental organisations, or governmental organisations, can offer a firm vital support and resources. The company didn't have enough relationships or assistance, which had an impact on the capacity to grow and sustainability of the firm.
- 6. Social stigmas or cultural restrictions:** People who were the victims of acid attacks experienced social stigmas or cultural restrictions that resulted in their limitations of capacity to fully engage in economic activities. These difficulties unavoidably resulted in lack of dedication to work and necessary expertise.
- 7. Regulatory or legal challenges:** It is important to follow local laws and regulations when running a business in Kolkata or anywhere else. The company was confronted with legal or regulatory obstacles, such as licence, permission, or compliance problems, which would have negatively impacted operations.
- 8. Internal management problems:** Poor decision-making, lack of leadership, or inadequate business planning are examples of internal management problems that can affect a company's success. Perhaps that was a behind the company's failure.

What changes could be made to revive the business?

West Bengal acid attack victims could significantly improve their life and the lives of the community by starting a food service business. The following alterations are the ones which could have contributed to the success of the business model:

- 1. Giving acid attack-victims moral counselling services:** There could be success through giving acid attack victims job opportunities as well as some counselling services. That might help them rebuild their confidence as well as become financially independent. They may benefit from this in terms of their mental health and ability to support them.

2. Increasing public awareness of acid attacks: The company could contribute to increasing public understanding of acid assaults and the effects they have on their victims. Motivating other people and organisations to take action and support the cause by presenting the accomplishments and success stories of acid attack survivors could bring success to the particular initiative of the company.

3. Encouraging others to launch their own enterprises through promoting entrepreneurship: Through launching a company with acid attack survivors, the company might have acted as a role model to urge others to launch similar businesses of their own. Increased employment possibilities and regional economic growth might have resulted from this.

This enterprise, after being enriched with the experience of running a business with the particular group of victims, has the potential to combat the stigmatisation of acid attack survivors in society and aid in eradicating any unfavourable stereotypes that may exist. This may result in a rise in the acceptability and social integration of acid attack survivors.

Overall, establishing a culinary service company in West Bengal with acid attack survivors is capable of improving the lives of the survivors and the neighbourhood. It can aid in their empowerment, spread of knowledge about acid assaults, alter attitudes in society side by side offering nutritious food options, and encourage entrepreneurship.

The benefits of running the business:

With the aid of a few socioeconomically underprivileged women and the availability of doorstep deliveries of wholesome food and the revival of extinct cuisines, the company was able to run the food business. These women's lives have probably changed in a number of social and economic ways as a result of the initiatives. Here are some potential results:

1. Economic empowerment: The company was able to help these ladies become more economically independent by giving them job options in the food industry. They could have a steady revenue stream to be able to take care of their fundamental requirements, including food, shelter, healthcare, and education for themselves and their kids. They could have been less reliant on charity or outside assistance as a result of their greater economic stability.

2. Skill development: Through their involvement in the food industry, these women might have obtained new skills and knowledge in areas such as cooking, food safety, and customer service, which can be great assets in their future careers. The company had also contributed to the preservation and promotion of traditional culinary skills and cultural legacy, which might be a source of pride and identity for these women.

3. Boosted self-esteem and confidence: Being a part of this food business and contributing to its success might have given these ladies a boost in self-esteem and confidence. This sudden sense of accomplishment and acknowledgment might have increased their self-worth and self-confidence, resulting in improved mental health and a favourable impact on other aspects of lives.

4. Increased social status: Through their involvement in the food industry, these women may have received attention and respect in their communities for their abilities and achievements. This may have improved their social standing and given them a bigger influence in decision-making processes within their families and communities. It may also have questioned established gender norms and prejudices, encouraging these women to overcome cultural constraints.

5. Improved health and well-being: Learning the system of delivery of healthy food in the company, these women might have developed better sense of nutrition and health outcomes for themselves and their family. Access to good food might have improved their physical health, resulting in more energy, more production, and lower healthcare expenditures.

6. Economic cascades: The local economy might have benefited from the food industry's actions. The company had supported local farmers and helped the local agricultural sector by collecting ingredients locally. Additionally, while offering doorstep delivery, the company had opened up other revenue streams for the logistics and transportation service providers, which could have further boosted local economic activity.

Overall, through offering work possibilities, skill development, greater self-esteem, elevated social status, better health outcomes, and economic ripple effects, the food business had probably contributed to positive social and economic transformations in the lives of socioeconomically disadvantaged class of people. The initiatives to promote healthy food, doorstep deliveries, and the revival of forgotten cuisines had also improved the lives of those who were served through the business.

Conclusion:

The food delivery company was founded in 2018 with the goal of giving individuals in the Salt Lake and New Town neighbourhood in Kolkata home-cooked cuisine, especially office workers who are pressed for time and seeking nutritious meal options. A couple of these people were hired to work in the company in an effort to improve the lives of others who had endured acid attacks.

Although the company was initially unregistered, the team worked hard to build a solid reputation for serving wholesome cuisine and offering dependable service. The business concentrated on utilising ingredients that were fresh and locally obtained and on cooking in a spotless and hygienic setting. To accommodate a range of palates and dietary needs, the menu card offered a choice of items.

As more clients were attracted, the business began getting favourable reviews and word-of-mouth referrals which aided in the expansion of the company. Additionally, the company started getting requests to cater events and parties which allowed demonstrating the company's culinary prowess and growing its clientele. The company had to solve the problem of finding out a suitable kitchen to accommodate its entire activities in the Salt Lake area close to the clients.

The stigma attached to acid attack victims in society was another difficulty which was to be faced. They frequently encountered discrimination and rejection from possible employers despite their tenacity and diligence. However, the company was committed to giving them a welcoming and inclusive work atmosphere where they could demonstrate their skills and support themselves in a dignified manner. In the ensuing last couple of years, the company maintained its commitment to giving its clients high-quality food and services while also fostering a welcoming and inclusive workplace for its employees. The company finally got registered and started operating in accordance with all applicable rules and regulations as the customer base developed.

The company is still serving customers in Salt Lake and New Town areas of Kolkata. It feels great pride in the fact that it is able to improve the lives of the employees in a dignified manner. The ongoing support and inspiration of the customers have contributed to the company's expansion and success.

In conclusion, founding a meal delivery company and hiring victims of acid attacks was a choice that demanded a lot of grit, perseverance and bravery. It has, however, also been among the most personally and professionally fulfilling events of the initiative.

It could be mentioned at the that the company has been considering to bring about diversity in workplace in terms of providing opportunities to the third gender also as it is found that these kind of initiatives have already been taken by various reputed organisations in creating employment opportunities for them in diverse types of activities. Social inclusion in every respect is highly needed to avoid wastage of human capital. Underutilisation of human capital may result in under-achievement of potential growth of a country as well as that of the global society.

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A Conceptual Paper On Financial Literacy

Namreen Asif V. A*

ABSTRACT

Public policies should aim to improve financial literacy among consumers to promote welfare. This objective is supported by data from the current mortgage crisis, consumer over-indebtedness, and household bankruptcy rates. A framework that aims to measure the capacity of consumers to make sound financial decisions is needed to improve financial literacy. This article aims to provide a comprehensive overview of financial education and how these organizations can help people become more knowledgeable about their finances. It will also talk about the various services they can provide. In addition, we will use the SWOC analysis tool to fully understand the importance of this concept.

This review paper examines the concept and advantages of financial literacy and financial institution from journal papers and scholarly research publications. The paper provided an extensive overview of the significance of financial education, which is essential knowledge that every person should have in order to compete in the global marketplace. The objective of this study is to gain a deeper understanding of the significance of financial institutions and literacy.

Keywords: Financial literacy, Education, Financial Services, Personal Financial Management.

1. INTRODUCTION

A person's financial literacy is a vital factor that can help them make sound decisions. According to the (OECD) Organization for Economic Co-operation and Development, financial literacy involves having the necessary knowledge and skills to make informed decisions when it comes to managing their finances. It can also help individuals become more involved in the economy. This essay aims to review the literature on financial literacy and will talk about the various aspects of this subject. Some of the alternative financial products that have gained popularity include pawn shops, rent-to-purchase businesses, and payday loans, which have high-interest rates. Due to the current economic situation, people are becoming more responsible with their finances. The typical underestimation of the vulnerability of certain demographic groups, as well as the lack of knowledge about financial topics. Women, in particular, are less confident than men. This affects how they make financial decisions. The following sections cover the various aspects of financial literacy evaluation. It provides a comprehensive analysis of the multiple factors that influence a person's level of financial literacy, as well as the strategies that can help improve it. Financial literacy is a subject that is not taught in school life generally but yet it is a very important subject for every once life because every action you take in life is somewhere or the other it is linked to money. In an increasingly People must be capable of making wise financial choices in a riskier and more globalized environment. When it comes to personal finance management most people think that there is no need to learn anything about it. Being financially literate involves knowing how to manage your money. It involves understanding how to pay your bills, save and invest, and borrow responsibly. By starting with the fundamentals of money management and developing into a wise spender, take the effort to educate yourself about finances. Spending time on your financial growth enhances your investment and saving choices. You may create a substantial nest egg by making the most of your resources, including age, talent, money, and the capacity for forming virtuous habits. Opening a bank account is the first step in learning about finances. Create a direct deposit after you get a paycheck. This keeps your money safe and prevents you from having to pay interest to cash advance businesses that take a cut of your check as payment.

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Access to a variety of perks, convenience, and security are all benefits of having a bank account. Checks and debit cards provide evidence of purchase, allowing you to keep track of transactions and see where your money is going. This essay will teach us about financial literacy and the various financial. Services are offered by various financial institutions in the hopes that when future generations age and face more complex financial choices as a result of increased financial literacy, they would be able to live secure, happy lives. Everyone should be financially literate. Wealth creation starts with financial knowledge. Financial knowledge is as essential to breathing as air.

2. REVIEW OF LITERATURE/ RELATED WORKS:

Even though financial literacy can vary based on one's education level and income, research has proven that highly educated individuals are still as ignorant as those with less education. (though in general, the latter do tend to be less financially literate).

Table 1: Contribution by different scholars on Financial Literacy Education on Subsequent Financial

Sl. No	Focus	Contribution	Author/ Reference
1	Financial Literacy	Having a good understanding of financial matters is very important for people to have a successful retirement. In fact, knowledge about various financial topics can increase a country's chances of having a retirement plan.	Lusardi, (2011).
2	Measuring Financial Literacy.	Indicators of financial literacy, such as knowledge and behavior, are frequently used to forecast the need and explain variations in outcomes, including when it comes to saving and investing.	Huston, S. J. (2010).
3	Personal Financial Literacy	This study will examine the financial literacy of the participants, how it links to their personal characteristics, and how it influences their decisions and viewpoints. It has been established that college students lack knowledge about personal finance. Due to their ignorance, they won't be able to make informed decisions.	Chen, H., & Volpe, R. P. (1998).
4	Current Literature and Future Opportunities	Due to various factors, such as the deregulation of financial markets and the rise of credit cards, financial literacy has become more important.	Marcolin, S., & Abraham, A. (2006).
5	Financial Literacy among the young	Financial literacy is strongly connected with social and economic standing, as well as family financial knowledge. In instance, compared to a female with less than a high school graduation whose parents were not well-off, a guy with a college degree whose parents owned stocks and retirement funds is nearly 50% more likely to be aware of risk diversification. These findings have implications for consumer policy.	Lusardi, A., Mitchell, O. S., & Curto, V. (2010).

6	Financial Literacy Explicated	This study provides a definition of financial literacy, a concept that has gained prominence in this century. Academics, government representatives, financial experts, and consumer advocates have all used the term informally to describe the knowledge, abilities, self-assurance, and motivation needed to manage money well. A better definition should be used in future research to aid consumers in understanding and adjusting to their changing living conditions and an ever-more complex economy.	Remund, D. L. (2010).
7	Financial Literacy Education on Subsequent Financial	The findings revealed that course participants and non-participants both lacked financial literacy. Additionally, participants did not perceive themselves to be more savings-focused or to have better financial conduct than those who did not finish the course.	Mandell, L., & Klein, L. S. (2009).
8	Financial Literacy of High School Students	The discrepancy in family economic well-being is made worse by the fact that pupils from affluent homes frequently have much greater levels of financial literacy than students from less fortunate families. Furthermore, it has not been shown that high school courses in personal finance and money management are effective in raising financial literacy levels.	Mandell, L. (2008).

3. RESEARCH GAP

There are many factors that prevent people from becoming financially literate at the macro, meso, and micro levels. These include an overreliance on the financial sector, an inadequate understanding of financial concepts, government regulations, and lack of effective life-cycle planning engaging and fascinating ways to teach financial literacy skills this can be attributed to a variety of factors worth discussing.

4. RESEARCH AGENDA

Knowledge and Understanding of financial concepts and risks, as well as the abilities, drive, and self-assurance to put that knowledge and understanding to use in order to make wise choices in a variety of financial contexts, to enhance one's own and society's financial well-being, and to enable participation in economic life.

5. OBJECTIVES OF REVIEW PAPER

1. To Comprehend the idea and significance of financial literacy.
2. To Study the Importance of Financial Literacy and Financial Education.
3. To examine the different Components and Scope of financial Literacy.
4. To study the various financial Institutions.
5. To evaluate the Financial Literacy using SWOC analysis.

6. METHODOLOGY (of Data & Information collection and Analysis)

The secondary data collected for this study came from various sources, such as books, journals, research articles, and publications. The SWOC analysis method was utilized to examine the financial literacy of the subjects.

7. CONCEPT

Financial literacy has turned out to be a part and tract of today's life. To put it simply, the foundation of one's association with money. Financial literacy is crucial for helping every individual to manage the factors such as avoiding high levels of debt that might result in bankruptcy, defaults, and foreclosures and saving enough to provide adequate income during the time of retirement. We should always try to save more money. Our savings can be invested to make money from money. Whenever our income exceeds our expenses, we save the surplus money. This money can be invested or used to meet future expenses or during the time of emergencies. Debt is money that we borrow from an institution like a bank or money lender or a friend to meet our expenses. We need to repay debt and the interest charged on it at a future income. We should try to spend less so that we can avoid taking on debt except in certain circumstances. When our income and expenses are equal, we are unable to save anything. This is a risky situation because we have no savings then we will not be able to meet future expenses during emergencies. This is not an advisable scenario to spend more money. we should always try to spend less than we earn. Whenever there is a lack of control over your expenses and spending it's very important to understand and to know the concept of financial literacy and its ability to understand how money works in this world

7. Why Financial literacy is required?

Financial literacy is required and important for every aspect of life. Which we call life's financial goals. Which can be education, the building of a house, lifestyle, Marriage, helping or supporting the family, earning a bigger income, self-development, travel and recreation, and saving for the future. It helps individuals attain financial stability, make informed decisions, and manage their money. Financial literacy also equips them with the necessary knowledge to excel in their financial endeavors. It enables one to attain debt-free status by adopting the finest debt strategies.

Meaning of Financial Literacy: Being financially literate means knowing how to keep what you earn (saving) and how to earn more with what you keep (investing). Financial literacy refers to the art of investing and managing money and the ability to make good financial decisions.

Definition of Financial Literacy: The FCAC is an excellent source of financial literacy information & resources. According to the Financial Consumer Agency of Canada (FCAC), Financial literacy is having knowledge, skills, and confidence to make responsible financial decisions for the future. Having the necessary financial literacy skills can help people make educated decisions and manage their financial obligations. It can also help them prepare for their future financial goals.

8. FUNDAMENTAL COMPONENTS OR TOOLS/ PREREQUISITES OF FINANCIAL LITERACY:

A person should have the necessary financial literacy to manage their debts and money. This skill can be acquired through various components and exercises. financial literacy is a set of skills that people should learn. They are

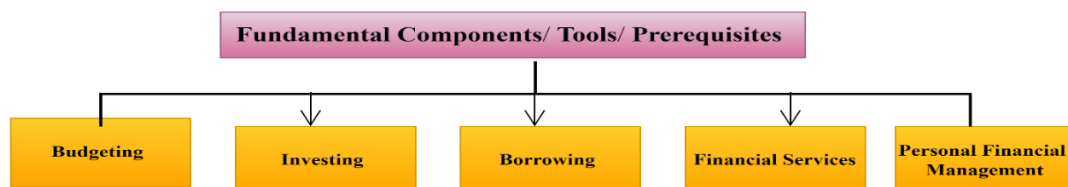


Fig1: Fundamental Components / Tools of Financial Literacy

Source: Compiled by Autho

Fundamental Components / Tools of Financial Literacy are:

1. Budgeting: A budgeting process can help a person determine if they can meet their financial obligations and goals. It involves spending, saving, giving, and investing.

2. Investing: Financial literacy requires an individual to understand the various components of investing. It involves putting money in an endeavor that will result in long-term success and generate substantial returns. Investments can help boost a person's monthly income and provide them with avenues for generating exceptional returns.

3. Borrowing: What is debt is nothing more than one's borrowing. It involves spending money that isn't one's own. For instance, if an individual takes out a short-term credit card loan, they are also contributing to the debt. Understanding debt is very important to avoid negative perceptions.

4. Financial services: The financial services industry is a broad sector that includes various businesses such as banks, credit unions, insurance firms, fund managers, and accountancy firms that handle money. There are many activities that require financial services, such as investing, borrowing, and lending. Financial services can help people manage risks and build wealth. They can also help them lead stress-free lives.

5. Personal Financial Management:

A personal financial management system is a process that involves planning and managing one's finances. It can be used to plan and manage various activities such as budgeting, investing, and protection. It can be done through software or through a variety of tools that allow users to manage their finances. One of these tools is PFM, which allows users to consolidate multiple accounts into a single view.

FINANCIAL INSTITUTION

There are various financial institutions in the country that can provide financial support to businesses. These are state-owned and central organizations that are established to provide financial services to businesses. Financial institutions also include insurance firms, banks, and other financial services companies. It is the responsibility of the government to oversee and regulate these financial institutions, as they play a vital role in the country's economy. These entities are regulated by the government due to their vital role in the country's growth and development. Some of these include the central bank, pension funds, insurance companies, and post offices.

10.1 What are Financial Institutions?

A financial institution (FI) enables customers to bank with them by opening a bank account. A financial institution (FI) is a type of financial institution that enables transactions such as providing loans and deposits. In addition to being able to provide loans and deposits, financial institutions also engage in other monetary and financial transactions such as currency exchange and investments.

Various Types of financial institution

Financial institutions are businesses that deal with monetary and financial transactions, such as currency exchange, loans, investments, and deposits. A financial institution is an intermediary between the capital and the consumers. Some of the common types of financial institutions include insurance companies, commercial banks, asset management firms, and brokerage firms. It is important to identify the various types of financial organizations that can meet your needs. Following are the major types of financial institutions: generally, there are two types of financial institution, they are:

1. Depository institution
2. Non- Depository institution

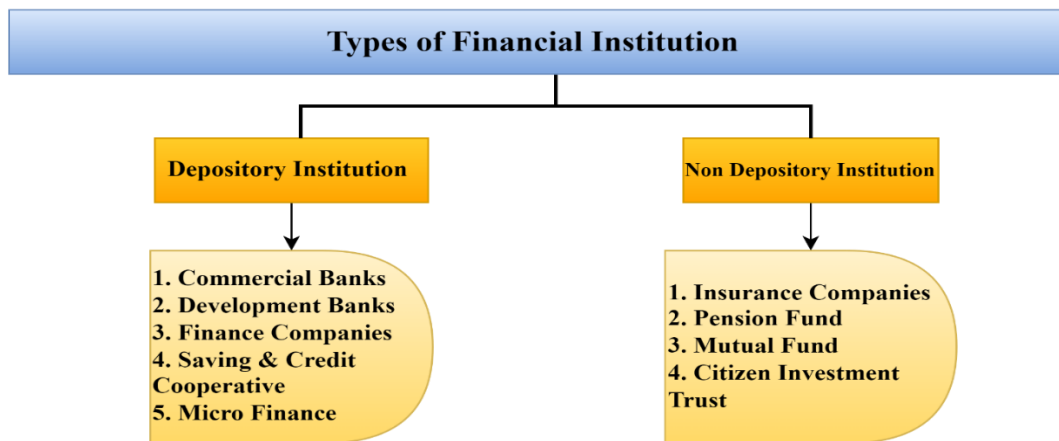


Fig2: Types of Financial Institution

Source: Compiled by Author

1. Depository Institutions:

A depository institution is a type of financial institution that accepts deposits from surplus assets and provides credit to the deficit. It can be found in various types of financial institutions, such as credit unions, commercial banks, and savings and loan associations. These institutions collect the savings of different individuals and provide short and long-term loans to the borrowers. The main depository institutions are:

- Commercial banks
- Development banks
- Finance companies
- Saving and credit cooperatives
- Microfinance

A. **Commercial banks:** India's commercial banks are the country's primary financial institutions. They provide various services such as loans and deposits to businesses and individuals. The borrowing and lending rates that commercial banks charge are referred to as the "borrowing" and "lending" rates.

B. **Development banks** There are various types of financial institutions that are focused on the development of industries, agriculture, and other key sectors. These are referred to as development banks. They are primarily established to provide infrastructure financing to help the private and public sectors grow. Development banks also cater to the long-term needs of businesses. They are:

- Industrial finance corporation [IFCI], 1948
- Industrial Credit and investment corporation of India, [ICICI], 1995
- Industrial development bank of India [IDBI], 1964
- State finance corporation [SFC], 1951
- Small industries development bank of India [SIDBI], 1990
- Export import bank [EXIM]
- National Bank for Agriculture and Rural Development [NABARD]

C. **Finance companies:** A finance company is a financial institution that provides credit to consumers for the purchase of various products and services. It can also acquire time-sales contracts and grant small loans directly to its customers.

D. **Saving and credit cooperatives** SACCOs are community-based financial organizations that are owned and operated by their members. These organizations promote economic interests by mobilizing and managing savings and other assets exclusively through their membership

- E. **Microfinance** for low-income or unemployed individuals, or groups that would otherwise be unable to access financial services, microfinance is a type of banking that provides small loans. It offers these loans in a safe and ethical manner.

2. Non - Depository Institutions:

These organizations, which include mutual funds, insurance firms, and investment trusts, are private or government entities. They act as an intermediary between borrowers, and savers, but they do not accept time deposits.

- **Insurance Companies**

Among the non-bank financial organizations that are commonly used are insurance firms. Since providing insurance has been around for a long time, it is one of the oldest forms of financial services. It helps individuals and corporations protect their assets against financial risk.

- **Pension fund**

A pension fund, also known as a superannuation fund in some countries, is any plan, fund, or scheme that provides retirement income. Pension funds are pooled monetary contributions from pension plans set up by employers, unions, or other organizations to provide for their employees' or members' retirement benefits.

- **Mutual fund**

A mutual fund is a type of investment trust that is managed by a professional fund manager. It collects and invests the money of various investors who share the same goal. A trust is created to collect and invest the money of several investors who share a similar objective. It can invest in various types of assets such as bonds, money market funds, and stocks.

- **Citizen investment trust**

The Citizen Investment Trust Act of 2047 provides that a statutory body can hold the government's ownership. It was officially incorporated on March 18, 1991.

11. How can one improve their financial literacy?

One of the most important factors that people can consider when it comes to improving their financial literacy is to develop a personal finance strategy. This process involves learning various skills such as budgeting and managing debt, among others. A budget should be created monthly to help one monitor their expenses and income. It will allow them to allocate their money according to their needs.

- Income (pay slips, investments etc.)
 - Fixed expenses (bills, rent, loan payments, etc.)
 - Other expenses (shopping, travel, etc.)
 - Savings
-
- **Manage Bills:** One must make sure that they are paying their bills on time. They can opt for automatic debit or set up recurring payment plans from their bank account. They should also regularly remind themselves about their payments. Paying bills is a must, and one should prioritize it in their budget.
 - **Maintain a good credit score:** A high credit score can help you get the best interest rates on loans and credit cards. It can also help you manage your finances better and make payments on time.
 - **Manage debt:** You can manage your debts by reducing your spending and increasing your payments. One of the most effective ways to do this is by implementing a debt reduction plan. For instance, paying off high-interest loans first.
 - **Start Saving & Investing:** One should start investing and saving as it is not difficult to do so following proper budgeting. After putting their money to work, they should set goals and allocate their resources to achieve them. This can be done through regular savings and investing. Having a goal can help people achieve their life goals without having to stress about it.
 - **Systematic Investment Plans:** One of the most important steps that individuals can take to improve their financial situation is by establishing a systematic investment plan. This will allow them to save a fixed amount each month. Having a long-term horizon is also important to ensure that they can generate significant returns. It is important that they establish a strategy that divides

- their goals into different categories. Having a financial advisor can help them plan their investments.

12. SWOC ANALYSIS OF EDUCATIONAL TECHNOLOGY AND THE INTERNET IN THE EDUCATION SYSTEM:

Internal factors over which you have some control are referred to as Strengths (S) and Weaknesses (W) by definition. Furthermore, by definition, Opportunities (O) and Challenges (C) are external factors over which the organization has little control

STRENGTH	<ol style="list-style-type: none">1. Having little knowledge about financial matters can make people vulnerable to experiencing a financial crisis. It can also affect an individual's ability to save for their long-term goals.2. You should prepare for financial emergencies by having contingencies in your plan. This will allow you to react quickly to any unforeseen events.3. Having a good financial plan will allow you to show your family that you are capable of managing your finances.4. Having good money management skills can also help with other aspects of one's life.
WEAKNESS	<p>One concern is that people who think they're knowledgeable about financial matters may be overestimating their capability to manage their money.</p> <ul style="list-style-type: none">• This can lead to poor decisions.• If they accumulate too much debt, they may end up making poor decisions.• They should consider investing in high-risk businesses.
OPPORTUNITIES	<ol style="list-style-type: none">1. Better financial judgment is a skill that people can develop.2. Debt and money management are two of the most important factors that one should consider when it comes to managing their finances.3. Having the necessary skills to make informed decisions is very important for people to achieve their financial goals.4. One can reduce expenses by improving regulation.5. Being able to make educated decisions can help people reduce their anxiety and financial stress.6. Better ethical decision-making can also be achieved by increasing one's awareness when it comes to choosing investments, credit cards, and insurance policies.

CHALLENGERS	<ol style="list-style-type: none">1. As developing nations gain greater access to financial services, it is becoming more challenging for them to become financially literate.2. The elimination of national, technological, and geographical barriers has made financial access in developing nations much easier.3. Urbanization, the rise of mobile phone technology, and the increasing number of remittances are some of the factors that have made it easy for people to access financial services even in rural areas.4. Without proper literacy programs, new bank account holders might not be able to manage their savings effectively.5. Being financially literate is a public good in developing countries. It can be achieved through the collaboration of foreign aid with financial institutions, regulators, educators, and civil society.
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Findings

1. Being financially literate can help individuals make educated decisions and become more involved in the overall economy.
2. Having the proper knowledge about financial matters can help people retire successfully.
3. Today, financial literacy is a vital part of every person's life. It is foundational knowledge that enables individuals to manage their money better. This includes making sure that they avoid getting into trouble with debt and having enough money to retire comfortably.
4. Financial literacy is also linked to various personal characteristics. This can influence how individuals make decisions and their perspectives on the world.
5. In the country, there are various financial organizations that can provide businesses with financial support. These are state-owned entities that are designed to provide various services to companies.

Conclusion.

Having financial literacy is a dynamic life skill that people should develop. It can help them manage their finances and make informed decisions. It's important that school children learn about budgeting and financial management during the school day. It's also never too late to improve one's financial literacy. By understanding its various components, one can make informed decisions and manage their finances. Even after reaching the age of 50, one can start investing their money. Having financial literacy can also help people avoid getting into debt. It can help them save for their future needs and avoid getting broke. The 2008 financial crisis was caused by a lack of understanding about mortgage schemes. This issue affected the entire economy.

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