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SWATIDHAN PUBLICATIONS



A Case Analysis on Women Entrepreneurship W.R.T. Mega Bags (Megha Gruhini Udyog)

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Abstract:

Since customs are deeply ingrained in Indian society and the sociological structure has historically been dominated by men, educated Indian women would have a long way to go before achieving equal rights and position. Indian women stand out from the rest of the pack despite all the social obstacles. They receive praise for their accomplishments in their respective fields. The social structure of Indian society was changing as a result of women's improved educated status and different ambitions for a better life, which forced Indian women to alter their way of life. In every sphere of life, including business, she has effectively battled against man. These female leaders are adamant, convincing, and prepared to take risk. With their tenacity, perseverance, and diligence, they were able to prevail in this fierce competition.

The goal of the current paper is to investigate the idea of the women entrepreneur, including: the reasons why women become business owners; the reasons behind their success, government schemes for women entrepreneurs and a case study of a woman entrepreneur from Pune, Maharashtra.

Key Words: Entrepreneurship, Business, Women Entrepreneurship.

Introduction:

Entrepreneurship is the creation or extraction of economic value.

A person who starts and/or invests in one or more enterprises, taking on most of the risks and reaping most of the gains, is referred to as an entrepreneur. Entrepreneurship is the practice of starting a business. The entrepreneur is frequently viewed as an innovator, a source of fresh concepts for products, services, businesses, and operational methods.

An entrepreneur uses their time, energy, and resources to create value for others. They are rewarded for this effort monetarily and therefore both the consumer of the value created and the entrepreneur benefit.

An entrepreneur is a person who plans, runs, and takes on the risks of a company or venture. The process of coming up with innovative methods to combine resources is called entrepreneurship. The entrepreneur gets money when the market value this novel combination of resources creates exceeds the market value these resources separately or in other combinations may create in other locations.

To paraphrase Gertrude Stein, "An entrepreneur is an entrepreneur is an entrepreneur," and it should not matter what size, shape, colour, or sex the entrepreneur might be. If so, good research on entrepreneurs should generate theory applicable to all. While research shows

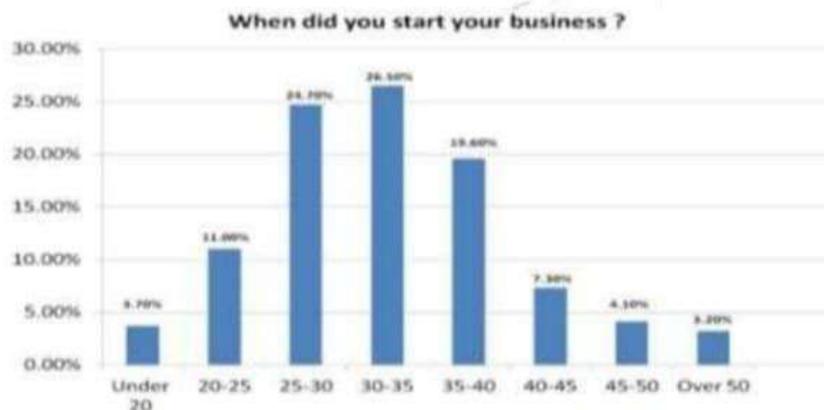
similarities in the personal demographics of men and women entrepreneurs, there are differences in business and industry choices, financing strategies, growth patterns, and governance structures of female led ventures. The mindset is a collection of abilities that enables people to recognize opportunities, seize them, learn from mistakes, and succeed despite obstacles. According to research, having an entrepreneurial attitude is highly valued by potential employers, can enhance academic performance, and is necessary for coming up with fresh company concepts.

What kind of entrepreneurship best suits you when you have developed this attitude, which may be learned. You must first comprehend the several varieties that are offered and how they differ from one another before you can respond.

Does the decision to start a business depend on one's age and gender?

An enterprise owned and controlled by a woman having a minimum financial interest of 51 per cent of the capital and giving at least 51 per cent of the employment generated by the enterprise to women.” — Government of India

Woman entrepreneur could be defined as a woman or group of women who engenders idea to start a business, organises, takes initiative, runs and manages the business organisations. It does appear to have an impact in India, where a poll reveals that most women entrepreneurs (51.2%) started their businesses between the ages of 25 and 35, after having some commercial experience. The majority of these female business owners are from major cities like Mumbai (30%), Delhi (15%), Bangalore (15%), Karnataka, and Tamil Nadu.



(SOURCE - "Women & Entrepreneurship in India 2019: Our New Study Uncovers What Women Need to Flourish." Women's Web)

Venture capitalists and other private equity investors claim that more and more women are taking the risk because of the success stories of start-up businesses in India and other countries.

Women entrepreneurs are making waves around the world, and they are also boldly exploring uncharted waters in India. Some of the ground-breaking ventures with women at the helm include MobiKwik, Yatra, ShopClues, Mydala, Zivame, Nykaa, SlideShare, Sugar Cosmetics and others in the financial ecosystems, travel and booking, beauty and clothing, ed-tech, and e-commerce verticals.

In civilizations where men predominate, women have also achieved great success as entrepreneurs and corporate administrators. Exemplary women who opened the path for other women were Naina Lal Kidwai, CGM of HSBC, and Indra Nooyi, former president of Pepsi who

received the coveted Padma Bhushan for their services to commerce and industry and business accomplishments, respectively.

The fact that there are many educated and skilled women paving the way is comforting, but the rise of middle-aged women entrepreneurs is more inspiring. The percentage of women who start their own businesses in their 40s, 50s, and even later is rapidly increasing.

Harbhajan Kaur (94), who defied gender and age stereotypes, opened a barfi shop in Chandigarh at the age of 90. Similarly, Yamini Mazumdar (88), mother of Kiran Mazumdar-Shaw, runs her own laundry business in Bengaluru that she started at the age of 68 after her husband passed away.

Women entrepreneurs in India might contribute to the creation of up to 170 million jobs by 2030, according to a joint analysis by Bain & Company and Google titled "Women and Entrepreneurship in India- Powering the economy with her."

Government Schemes:

Government also aids the women entrepreneurs in different ways. NITI Aayog has launched the Women Entrepreneurship Platform (WEP) for providing an ecosystem for budding and existing women entrepreneurs across the country.

DPIIT (Department for Promotion of Industry and Internal Trade) has created Start-up India Seed Fund Scheme (SISFS) with an outlay of INR 945 Crore to provide financial assistance to start-ups for Proof of Concept, prototype development, product trials, market entry, and commercialization. It will support an estimated 3,600 entrepreneurs through 300 incubators in the next 4 years.

The government has made the advancement of women a priority from its inception. The idea of women's development was mostly welfare-oriented up until the 1970s. The welfare concept gave way to a development perspective in the 1970s that acknowledged the mutually supportive nature of the development process. The 1980s embraced a multidisciplinary strategy with a focus on the three fundamental areas of work, education, and health. In every industry, including the SSI sector, women were given priority. Government and non-government organizations are increasingly focusing on the economic contribution that women make through their own businesses and industrial endeavors.

At present, the Government of India has above 25 schemes for women operated by different departments and ministries. Some of these are:

- 1) Integrated Rural Development Programme (IRDP)
- 2) Khadi And Village Industries Commission (KVIC)
- 3) Training of Rural Youth for Self-Employment (TRYSEM)
- 4) Prime Minister's Rojgar Yojana (PMRY)
- 5) Entrepreneurial Development programme (EDPs)
- 6) Management Development programmes
- 7) Women's Development Corporations (WDCs)
- 8) Marketing of NonFarm Products of Rural Women (MAHIMA)
- 9) Assistance to Rural Women in Non-Farm Development (ARWIND) schemes
- 10) Trade Related Entrepreneurship Assistance and Development (TREAD)
- 11) Working Women's Forum
- 12) Indira Mahila Yojana
- 13) Indira Mahila Kendra



- 14) Mahila Samiti Yojana
- 15) Mahila Vikas Nidhi
- 16) Micro Credit Scheme
- 17) Rashtriya Mahila Kosh
- 18) SIDBI's Mahila Udyam Nidhi Mahila Vikas Nidhi
- 19) SBI's Stree Shakti Scheme
- 20) Micro & Small Enterprises Cluster Development Programmes (MSE-CDP).
- 21) National Banks for Agriculture and Rural Development's Schemes
- 22) Rajiv Gandhi Mahila Vikas Pariyojana (RGMVP)
- 23) Priyadarshini Project-A programme for Rural Women Empowerment and Livelihood in Mid Gangetic Plains'NABARD-KfW-SEWA Bank project

Research Methodology:

The study is based on the secondary data collected from various websites, published reports, newspapers journals etc. A Case Study method is used for analysis of data.

Objectives of the study:

1. To study about women entrepreneurs in India.
2. To understand the various schemes available for Indian Women Entrepreneurs.
3. To understand the motivational factors and entrepreneurial skills in women entrepreneurs.
4. To analyze the case study of Mega Bags: A Start- Up by Ms. Meghana Bangale , A Woman Entrepreneur based in Pune, Maharashtra.

Literature Review:

1. Korreck, Sabrina (2019)

This paper studied and examined the causes of low female entrepreneurship rates with unconscious biases, a lack of business confidence, difficulty accessing funding and networks, a lack of family support and child care options being the main culprits, as well as inadequate security in workplaces and public areas. The study made a number of suggestions that could advance women's entrepreneurship which would help the women entrepreneurs in growing their probabilities of successes.

2. Koneru, Kalpana (2017)

This research paper aimed to investigate the idea of women entrepreneurs - Reasons why women become business owners. Reasons for the poor growth of women entrepreneurs in India and recommendations for their expansion -Promotion and development strategies for Women entrepreneurs in India: A case study of a Ludhiana woman business owner.

3. Mishra, K (2016)

The findings of this study revealed that rural women have low financial flexibility, lack of direct property ownership, lack of balance between family and career responsibilities, and a lack of entrepreneurial skills and financial resources. lack of self- confidence, an unsteady schedule of life, a lack of education, ignorance of one's own capabilities, a low risk tolerance level, a lack of self-confidence, difficulties working with men, flexibility restrictions, and a lack of contact with successful women are all factors as per their study. The development of rural women entrepreneurs in India is severely hampered by rural entrepreneurs. They recommended

that the Indian government implement training, capacity-building, and development programmes to help rural women entrepreneurs succeed by enhancing their entrepreneurship abilities.

4. Sharma, (2013)

The author of this paper observed and presented this was in the nature of a descriptive study. For the purpose of writing the article, the secondary data and information have undergone rigorous analysis. The secondary data were gathered from conference proceedings, books written by various academics and researchers, and articles published in various magazines and publications, websites, paper, and writing paper. She concluded that Numerous obstacles experienced by female business owners included lack of education, societal restrictions, legal requirements, high manufacturing costs, a male-dominated society, a lack of managerial skills, a lack of self-assurance, etc. Women entrepreneurs are influenced by a variety of factors, including Pull and Push influences. Women have the ability and drive to start, maintain, and manage their own businesses in a very organized manner. With the right support and encouragement from society, families, and governments, these women entrepreneurs can become part of the mainstream of the national economy and they can help India's economy grow.

5. Kaushik, Sanjay (2013) In this study the researcher examined and found Economic progress is centered on entrepreneurship. A crucial component of entrepreneurship is the entrepreneur. Women are currently becoming a more powerful economic force. Researcher explained that family is made up of women, which creates society and family. Any nation's progress depends on the social and economic advancement of its

women. Every woman wants to start her own business, but in modern Indian society, it is difficult to do so successfully. Because of the changing environment, males today readily accept the possibility of women entrepreneurs. Our expanding service industry encourages women's entrepreneurship as well. The goal of the study was to identify numerous internal and external factors that encourage and discourage women's entrepreneurship

6. Siddiqui, (2012)

This Paper studied the issues and difficulties that Indian women business owners encounter. They found that Women entrepreneurs are those who take on difficult roles in order to fulfil their own wants and achieve financial independence. Many ladies possess this quality, but they were never given the chance to exhibit their abilities, therefore they are unaware of their true potential. The research was exploratory in nature. Both primary and secondary sources were used to create the paper's data. Unstructured questionnaires were used for the primary data collection. The secondary data were gathered from publications including reports, magazines, and web browsing. Women's family responsibilities, gender inequity, money issues, a low risk tolerance, and male vs. female competitiveness are a few of the primary issues mentioned by the researchers. The study suggested that by providing enough training, incentives, encouragement and motivation, and social acknowledgement of their entrepreneurial abilities, the obstacles of women entrepreneurs may be eliminated.

7. Das, (2000)

The intention of the current research paper was to examine the idea of a woman entrepreneur and to evaluate the difficulties and trends affecting the growth of various professions. It has also made suggestions for ways to eliminate and cut back. obstacles to women's entrepreneurial development and survival in the globalised world through study of SWOT Analysis in the Indian context.



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10. <https://www.econlib.org/library/Enc/Entrepreneurship.html> by Russell S. Sobel
11. Women Entrepreneurs: Moving Front and Center: An Overview of Research and Theory
Patricia G. Greene, University of Missouri – Kansas City Myra M. Hart, Harvard Business School Elizabeth J. Gatewood, Indiana University Candida G. Brush, Boston University Nancy M. Carter, University of St. Thomas
12. <https://www.shecapital.vc/blogs/women-entrepreneurship-in-india>
13. <https://seedfund.startupindia.gov.in/about>
14. <https://www.startupindia.gov.in/content/sih/en/government-schemes.html>



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A STUDY RELATED TO INDIVIDUAL INVESTOR PERCEPTION TOWARDS INVESTMENT OPTIONS AVAILABLE TO THEM IN MUMBAI (INDIA)

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ABSTRACT

Purpose- The purpose of this study is to find out the individual investor interest in the investment of different options available to them.

Design/Methodology/approach- The research was conducted with the help of questionnaire designed to ask from the samples chosen deliberately with the intension of investing.

Findings- This study finds that there is significant variation in Investor perception towards Mutual Fund & Other Investment Avenues due to their knowledge and understanding for the avenues to invest and also their earnings.

Keywords- Mutual funds, investor, investment options, financial sector, perception.

INTRODUCTION

India is growing rapidly in the financial sector, where number of options are available to the investors to invest in different areas and earn a huge profit and multiply the profitability with less risk. In early days investment options were only Bank deposits, bonds, government schemes etc. but nowadays various market related options are available to the investors to invest in various government and non-government funds which are a form of alternative investments(Salunkhe et al., 2020). For decision making every investor divides the investment goals in three basics categories i.e., long term, medium term, and short-term investment. Investment means putting the funds in some asset which is going to give handsome returns according to our expectations and leads to capital appreciation(Ikhar Mahendra kumar2014)Investment plan is a blueprint or road map which give clear picture of investment(Bhasin, 2023). Growth and finance of country are interdependent, if financial sector is strong, definitely there will be high growth rate of the economy and vice versa(Green, 2008). Various types of investments options available in India are fixed deposits, PPF, LIC and GIC policies, Government schemes, debt funds, corporate funds, government bonds, mutual funds ULIPS, direct equity, equity mutual funds, NPS, real estate, senior citizen saving schemes, SGBs, NSCs, Post office time deposits, Debt funds, Hybrid funds, ETFs, IPOs, FDs, etc. Various factors to be considered while investing are long term goals of getting huge amount, lowering the risk, best performance of money, less lock in period, tax benefit etc.(Bhasin, 2023). Investment decisions are taken with respect to market outcomes and conceptual knowledge and awareness of investors regarding the investments. Investors behaviour towards the investments change with respect to behavioural finance. (Praba, 2011). Thus we can say that perception towards a particular investment decides the ideal investment decisions and this paper puts an insight into how people are interested in investing various options available to them.

STATEMENT OF THE PROBLEM

Indian investors have number of options available to invest in the financial sector and that is one of the reason of the diversion of funds to different options. No investment is without risk or risk free. Anyone can invest in different options available to them. With this background, the research is conducted to study the investors preference towards different options available to them in Mumbai city.

REVIEW OF LITERATURE

Parihar and Sharma(2009) had realized that Mutual funds are the monetary intercessors that can summon savings of people and canalize that in the new avenues where funds are demanded. Recently mutual funds have emerged as active fragment in the financial sector.

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Gitman had said that an investment is an asset for the investor that can generate the positive value. When people invest in banks in saving accounts, they get fixed interest rate whereas investment in equity shares can give very high income.

According to Katherina Glac(2009), some investors are very socially responsible, and they are also sacrificing the returns over the conventional investments. Socially responsible investors have a great potential to invest in reasonable investments.

Katharina, Helmut, and Julia(2012) argue that today's way of informing the investors about risk in the financial markets is not enough to give them proper knowledge about the risk in investment in the financial market. The financial advisors should know how risk is perceived by these investors and how it is affecting the investment decisions.

Daniel Dorn(2010) is of the view that over the OTC derivatives have been accepted very easily by the people of Europe and Asia because people get lot of choice between many instruments that are little bit different from the other instruments. In his paper he examined the choices of small investors for the OTC derivatives and realized that role of financial intermediaries is very important to explain the investors for the investment options for sustainability and equilibrium with the financial product diversification and price dispersion.

Parihar and Sharma(2009) has also realized that mutual funds are the pools of saving and they share common objective of investors. The funds are collected in capital market instruments like shares, debentures, and other securities.

Naik and Shaikh(2022) since last three decades world is looking towards the better return investments and India is also not an exception. They say that investors have perceived very developed financial markets where many foreign investors are also interested to invest in Indian financial markets. Mutual funds, insurance companies, local pension funds and various other hedge funds are channelizing the domestic savings into the financial markets.

Jacob and Gupta(2023) examined that Mutual fund during the covid 19 period favoured the funds with lower risk and high flexibility because people were not assured for the profitability, and they wanted the flexibility of liquidation. People were also interested to invest in the funds which could outperform the other investments in the long run.

Ranganathan (2006) stated in her paper that Indian capital market had grown tremendously with the reforms like liberalization, globalization and privatization. The Indian economy opened up and various expansions carried out in the capital and money market with the help of financial institutions, intermediaries and financial markets.

Ghosh and Barman(2020) did their study related to investment pattern of female faculties compare to male faculties in Mumbai and they concluded that women are well informed about their investments nowadays and they take their financial decisions independently, that is the reason may financial products are designed in considerations with women investors.

NEED OF THE STUDY

Individual investor is having alternative sources of income, and it leads to their profitability. This study is very important to find out various investment options available to them and their knowledge about investing in a particular option.

SCOPE OF THE STUDY

This paper provides the insight of investors attitude towards investing in different options of investment available to them.

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LIMITATIONS OF STUDY

Limited time is one of the limitations of this study, another thing is the place. The researcher has conducted this study from Mumbai Maharashtra India so some variation will be noticed in the investment interest of individual investors in other parts of India as well as other countries.

HYPOTHESIS

H0 There is no significant variation in Investor perception towards Mutual Fund & Other Investment Avenues.

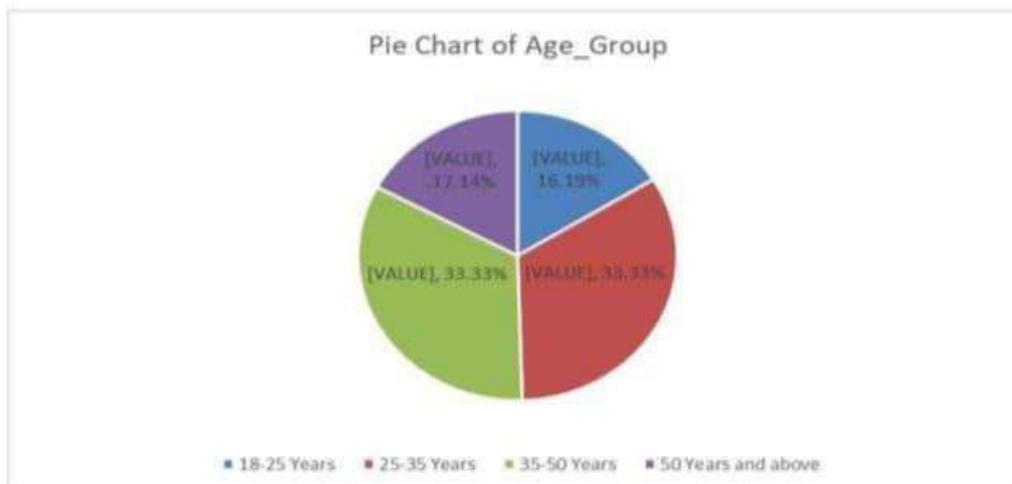
H1 There is significant variation in Investor perception towards Mutual Fund & Other Investment Avenues.

DATA ANALYSIS AND INTERPRETATION

Data is collected with the help of structured questionnaire and analysed with the help of SPSS

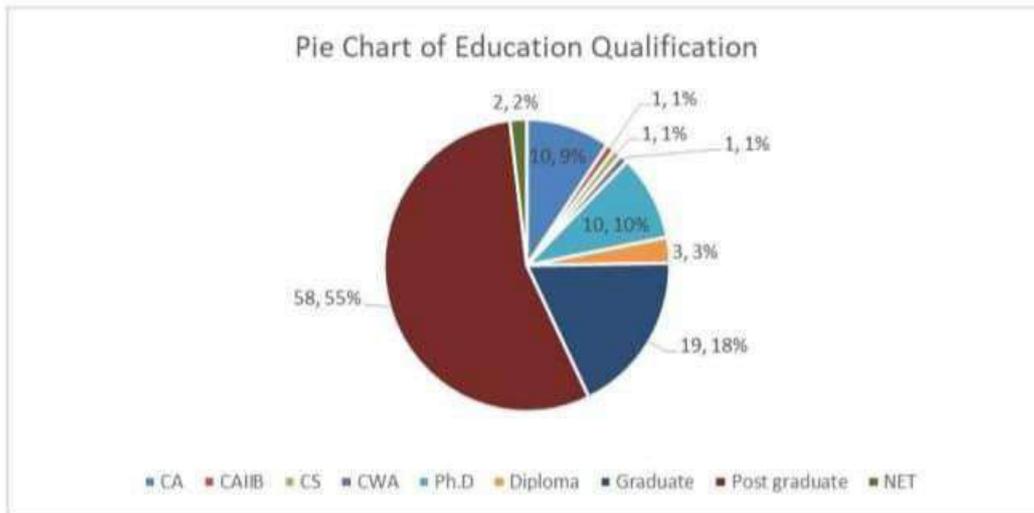
Q1. Age

Age group	Frequency	Percentage
18-25 Years	17	16.19%
25-35 Years	35	33.33%
35-50 Years	35	33.33%
50 Years and above	18	17.14%
Total	105	100%



Q2. Education qualification of the Investors

Qualification	Frequency	Percentage
CA	10	9.52%
CAIIB	1	0.95%
CS	1	0.95%
CWA	1	0.95%
Ph.D	10	9.52%
Diploma	3	2.86%
Graduate	19	18.10%
Postgraduate	58	55.24%
NET	2	1.90%
Total	105	100%



Q3. Marital status

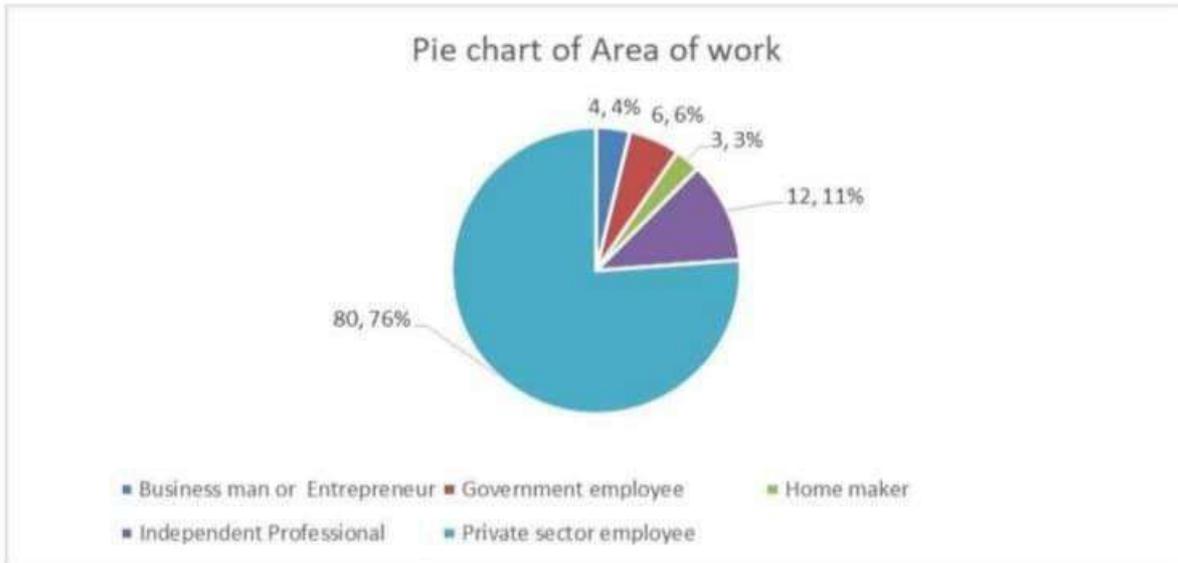
Marital Status	Frequency	Percentage
Married	71	67.62%
Unmarried	34	32.38%
Total	105	100%



Q4. Area of work

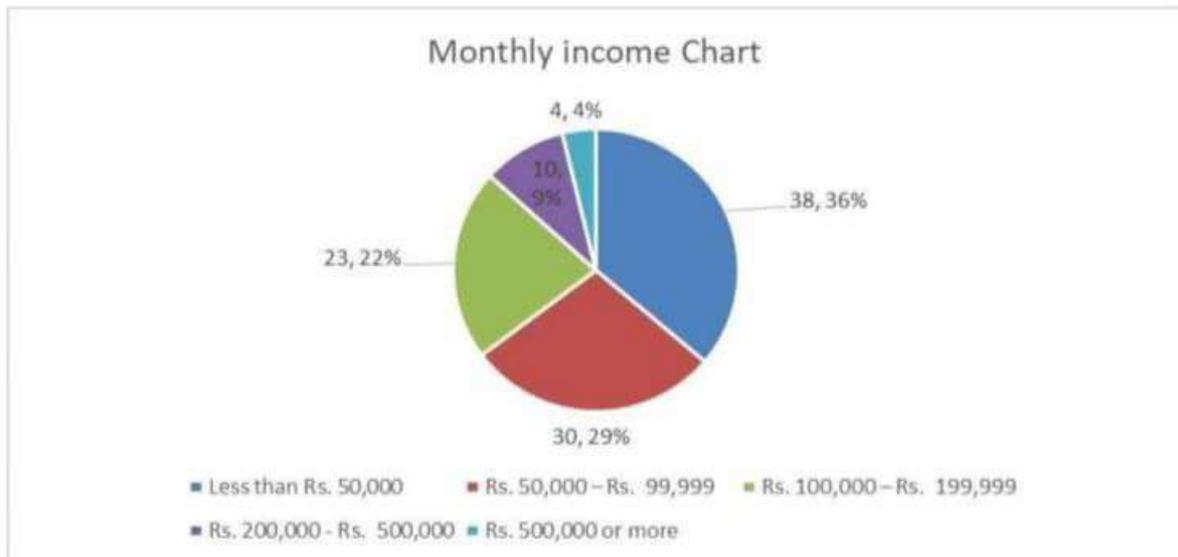
Area of work	Frequency	Percentage
Business man or Entrepreneur	4	3.81%
Government employee	6	5.71%
Home maker	3	2.86%
Independent Professional	12	11.43%
Private sector employee	80	76.19%
Total	105	100.00%

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Q5. Monthly Income Details

Monthly income	Frequency	Percentage
Less than Rs. 50,000	38	36.19%
Rs. 50,000 – Rs. 99,999	30	28.57%
Rs. 100,000 – Rs. 199,999	23	21.90%
Rs. 200,000 - Rs. 500,000	10	9.52%
Rs. 500,000 or more	4	3.81%
Total	105	100.00%



HYPOTHESIS TEST

H0: There is no significant variation in investors perception towards Mutual Fund & Other Investment Avenues

H1: There is significant variation in investors perception towards Mutual Fund & Other Investment Avenues

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Since observations are in terms of frequencies, Chi-square test is used to test the Null Hypothesis.

The SPSS **Chi-Square Tests** result table is as below.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	17.873 ^a	5	.003
Likelihood Ratio	17.252	5	.004
Linear-by-Linear Association	11.399	1	<.001
N of Valid Cases	1294		

a. 1 cells (8.3%) have expected count less than 5. The minimum expected count is 4.53.

Here the Chi-square value is $17.873 > 10.07$ (Table value) \rightarrow Ho is rejected at 5% los. The test is significant as the p-value = $0.003 < 0.05$

Conclusion: There is an association between the investor's perception towards Mutual Fund & Other Investment Avenues at 5% los.

FINDINGS AND SUGGESTIONS

From the above research it is concluded that the variation in investor perception is due to the knowledge and understanding towards the investment avenues available to investors Although the new generation is slowly and gradually attracted towards the Stock market, those investors who do not have time to directly invest in stock market are finding a way through Mutual funds where a |Asset Management Company does the Professional work of investing in stocks and securities. Now days the investor in Mumbai has various alternatives as well as opportunities to invest and so mutual funds are the best alternative substantially adopted by them.

CONCLUSION

Individual investor or Retail investors is the spine of financial market, growth of financial market is increased substantially. There are sea changes in understanding of investors and their perceptions towards investing in various options available to them. This study shows the appetite of individual investors who are non-professional investors and their perceptions towards investing in a particular avenue available to them. Individual investors are always trying to get quick money and that will be possible with the help of investing in mutual funds and equity linked saving schemes when the market conditions are favourable and the other long term avenues are helpful when the market conditions are not favourable.

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TECHNICAL ANALYSIS USING A CHART PATTERN TO PREDICT BSE STOCK PRICES

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Abstract:

India's leading financial centre, the Bombay Stock Exchange (BSE), is a vital indicator of the country's economic health. The banking industry in India is essential to the country's economic expansion, and understanding its stock market dynamics is essential to make wise investing choices. This study explores whether chart patterns, a key element of technical analysis, can predict stock price movements of the top 5 BSE-listed banking companies. Analyzing a 2-year historical dataset, the study examines the prevalence and predictive power of specific patterns like head and shoulders, double bottoms, double top and cup and handle patterns. While acknowledging limitations and external market influences, the research aims to assess the value these patterns offer for navigating the Indian market. Through success rate analysis and quantitative methods, the study seeks to provide a nuanced understanding of technical analysis' potential utility. Ultimately, it emphasizes the importance of considering technical factors to make wise investing decisions. This study investigates the use of chart patterns to predict stock prices in the Bombay stock exchange.

Keyword: BSE, Technical Analysis, Chart Pattern, Stock Market.

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Introduction: The Bombay Stock Exchange, founded in 1875 as the pioneer Share and Stock Brokers' Association, boasts a rich history as India's first and largest securities market, listing over 5,300 companies and ranking among the world's biggest exchanges alongside NYSE, Nasdaq, and others. Mumbai's BSE, a key player in India's capital markets, facilitates trading in equities, currencies, debt, derivatives, and mutual funds.

In technical analysis, patterns formed by security price movements on charts offer clues about future direction. These patterns, identified by connecting

highs, lows, or closing prices, aim to forecast price reversals or continuations. From simple trend lines to complex double, specific formations like head and shoulders (with two smaller highs around a larger one), double tops (failed attempts to break resistance), double bottoms (failed attempts to break support) and Cup and handle (U-shaped price rise (cup), brief consolidation (handle), then bullish breakout for potential trend continuation) all signal possible changes in price trends. Technical analysts seek to predict future market movements by recognizing these patterns.



This study investigates the effectiveness of chart patterns in evaluating the performance of five major Indian banking stocks (HDFC Bank, ICICI Bank, SBI, Axis Bank, and Kotak Mahindra) over the 2022-2024 period on the Bombay Stock Exchange. By analyzing their hourly closing prices, the research aims to obtain insightful knowledge about their market behavior within the context of India's booming Banking sector.

Review of Literature: In "A Neural Network Approach for the Analysis of Control Chart Patterns," Cheng (1997) proposes a novel use of neural networks for automated pattern recognition in quality control. This approach tackles the challenge of manually identifying patterns in control charts, critical for detecting process deviations. Cheng demonstrates the effectiveness of neural networks in automating this task, potentially replacing traditional manual methods with improved accuracy and efficiency. While promising, further validation and comparisons across various industrial settings are needed to confirm its robustness and real-world applicability.

In their exploration of charting patterns on price history, Anand, Chin, and Khoo (October 2001) unlock valuable insights for financial market analysis. Their research delves into the identification and interpretation of key patterns like head and shoulders, triangles, and flags, which serve as crucial signals for traders and investors. By analyzing historical price data and chart patterns, the authors aim to uncover potential trends and predict future price movements. This work not only enriches the field of technical analysis but also offers practical applications for individuals navigating trading and investment decisions. Overall, the research provides a comprehensive overview of charting patterns and their significance in deciphering market dynamics.

Masood and Hassan's (2010) paper offers a critical review of using Artificial Neural Networks (ANNs) for control chart pattern recognition. They meticulously analyze ANN architecture choices,

feature extraction methods, and performance evaluation specific to this application. Highlighting challenges like overfitting, dimensionality, and data imbalance, they emphasize their importance for reliable and efficient ANN-based systems. This useful tool for scholars and practitioners seeking to leverage ANNs in quality control provides insights for future advancements in the field.

Bag et al. (2012) propose an automated control chart pattern recognition expert system in their comprehensive paper. Detailing the planning and execution methodology, the system focuses on accurately identifying various patterns in common statistical process control charts. Through experimental results, the authors showcase its effectiveness in efficiently recognizing diverse patterns and anomalies, offering valuable insights into quality control. This research presents a promising solution for automating pattern recognition tasks, potentially streamlining industrial processes.

In Hachicha and Ghorbel (2012) conducted a comprehensive survey of control-chart pattern recognition research from 1991 to 2010. They proposed a new classification scheme to organize and analyze the vast literature, and systematically reviewed and categorized existing approaches. For researchers and practitioners, this analysis is a useful resource as it offers insights into the development and trends of the area. The authors also synthesized findings from numerous studies to contribute to theoretical knowledge in quality control and offer practical guidance for developing and implementing pattern-recognition systems in industry. Their comprehensive survey is a key reference for understanding the state-of-the-art in detecting anomalies and patterns within control charts.

Objective of the study:

- To understand the various Chart patterns.
- To know the selected banking stock price pattern during study period.



- To analyze charting patterns for buy/sell decisions in chosen stocks.
- To offer suggestions for investors to make better trading decisions.

Research Methodology: This study takes an analytical approach to examine the performance of five prominent Banking companies - HDFC Bank Ltd., ICICI Bank Ltd., State Bank Of India, Axis Bank Ltd. and Kotak Mahindra Bank Ltd. - on the Bombay Stock Exchange. Instead of generating new data, it dives into existing hourly closing prices from 2022 to 2024. By using technical tools chart patterns like Head and Shoulder pattern, W or Double bottom pattern, M or Double top pattern and Cup and Handle Pattern, the study aims to uncover hidden patterns and trends in these companies' performance. This valuable information can then be used by investors to make informed decisions about future stock movements, while the Banking sector itself can gain deeper insights into these companies' strengths and weaknesses, ultimately helping both make better choices for continued growth and success.

Tools and techniques of data analysis:

Head and Shoulder pattern: The head and shoulders pattern is made up of three peaks and two troughs. The left shoulder is the name given to the first peak. The pattern's tallest peak, referred to as the head, is the second peak. The right shoulder is the name of the third peak. The two troughs are called the neckline.

In a bearish head and shoulders pattern, the price makes a new high, then falls back down to the neckline. The price then makes another high, but it does not reach as high as the first high. The price then falls back down to the neckline again and breaks below it. This break below the neckline is a signal that the price is likely to continue to fall.

W or Double bottom pattern: A technical analysis chart formation that resembles the letter "W" is called a double bottom pattern. It happens when the price of

a stock falls to a low point, rebounds, falls again to a similar or slightly lower low point, and then rebounds again. This pattern suggests a possible change in direction from a downtrend to an uptrend, as buyers may be stepping in at the support levels created by the lows.

M or Double top pattern : The M pattern is referred to as a "double top" or "W-M formation", reflects a bearish trend reversal that typically forms at the peak of an uptrend. Three candlesticks are included:

First candlestick: A long bullish candlestick with a high wick, indicating strong buying pressure.

Second candlestick: A smaller bearish candlestick with a lower high than the first candlestick, suggesting weakening buying momentum.

Third candlestick: Another long bearish candlestick with a lower high than the second candlestick, confirming the reversal and potential downtrend.

Cup and Handle Pattern: The pattern of the cup and handle represents a bullish continuation that typically forms after an uptrend. It consists of three main parts:

The Cup: This is a U-shaped pattern created by two price swings that resemble the rounded bottom of a cup. The first swing moves up from the current price, then dips down, and then moves back up to a level near the starting point. This first swing stands for the early upward trend and a period of consolidation.

The Handle: A smaller dip follows the cup's downward curve and resembles the handle of a cup. It shouldn't be too deep, ideally staying within the upper third of the cup's depth. The handle represents a brief period of consolidation or pullback after the initial uptrend.

The Breakout: This occurs when the price breaks above the neckline, which is a horizontal line drawn across the top of the cup. A confirmed breakout strengthens the bullish signal, suggesting a continued uptrend.

Data Analysis and Interpretation:

HDFC Bank Ltd. :



Figure 1. Head and Shoulder Pattern

From Figure 1, it can be observed that, the left shoulder is formed at around ₹1,630.00. The head is formed at around ₹1,757.00. The right shoulder is formed at around ₹1,700.00. The price has broken below the neckline, which suggests that the price will probably keep dropping.

ICICI Bank Ltd.:



Figure 2. W or Double Bottom Pattern

From Figure 2, it can be observed that, the two lows of the potential double bottom pattern are around ₹980 - ₹985. The neckline, which is a horizontal line connecting the two peaks of the lows, is around ₹1012. The price has broken above neckline with the strong green candle. The W pattern suggests that the downtrend is losing momentum and that buyers are gaining control.

State Bank Of India :



Figure 3. M or Double Top Pattern

From Figure 3, it can be observed that, the two high of the potential double top pattern are around ₹568 - ₹564. The neckline, which is a horizontal line connecting the two lowest points of the high, is around ₹556. The price has broken below neckline with the strong red candle. its confirmed, price has broken neckline and losing upside momentum. The M pattern suggests that the uptrend is losing steam and that sellers are gaining control.

Axis Bank Ltd.:



Figure 4. Cup and Handle Pattern

From Figure 4, it can be observed that cup and handle pattern forming. The cup is starting to form, with the price making two upward swings followed by a consolidation period. The handle is fully formed, as the price has taken 0.61% support on fibonacci retracement levels.

Kotak Mahindra Bank Ltd. :

Figure 5. M or Double Top Pattern

From Figure 5, it can be observed that, the two high of the potential double top pattern are around ₹1926 - ₹1920. The neckline, which is a horizontal line connecting the two lowest points of the high, is around ₹1890. The price has broken below neckline with the strong red candle. its confirmed, price has broken neckline and losing upside momentum The M pattern suggests that the uptrend is losing steam and that sellers are gaining control.

Findings:

- Both Figure 1 and Figure 5 show potential double top patterns with breakouts below the neckline, hinting at a downtrend and the potential for further price drops.
- Figure 2 shows the price has broken above the neckline with a strong green candle, suggesting an uptrend. This bullish signal suggests continued price appreciation.
- Figure 3 shows the price has broken below the neckline with a strong red candle, suggesting a downtrend. Bearish signal suggests price continuation lower.
- Figure 4 shows a potential cup and handle pattern forming, which could indicate a bullish continuation.

Suggestions:

- Figure 1 shows Consider shorting the stock or taking profits on long positions.

- Figure 2 shows Consider buying the stock or going long on existing positions.
- Figure 4 shows Wait for the cup and handle pattern to complete before making a decision.
- Figure 5 shows Consider shorting the stock or taking profits on long positions.

Limitations:

- This study examines into 2 years of selected stock data.
- Secondary data was used for the research.

Conclusions:

India's banking sector on the BSE has been a strong performer, driven by global digitalization and domestic banking outsourcing demand. This study evaluated the performance of 5 major Banking stocks listed on the BSE by employing various chart patterns, including head and shoulders, double bottom/top, and cup and handle. The analysis covered a two-year period and identified potential trends for each stock.



While some stocks showed promising bullish signals like potential cup and handle patterns, others displayed bearish signals like double top patterns with breakouts, indicating potential downtrends. The limitations include the use of a relatively short timeframe and reliance on secondary data. However, the findings offer valuable insights for investors, suggesting potential buy/sell decisions based on the identified chart patterns. Investors should carefully consider the limitations of this study and their own risk tolerance before making any trading decisions based on these findings.

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Solving Current Limitations of GP-ELM-RNN based Plant Disease Detection and its Classification

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Abstract – The destruction of crops by pathogens including bacteria, viruses, and fungi has been a worldwide issue plaguing farmers for centuries. To maximize production and ensure agricultural sustainability, early diagnosis and prevention of crop diseases is crucial throughout the growing, harvesting, and processing stages of the crop. This study provides a comprehensive overview of the direct and indirect methods currently used in agricultural disease diagnosis. Preprocessing, segmentation, feature extraction, and model training make up the four stages of the proposed technique. An AHE and CL-SH preprocessing. Kapur thresholding is used for segmentation. The model is trained with GP-ELM-RNN, and the features are extracted by a co-occurrence colour technique. Two competing methods, ELM and ELM-RNN, are compared and contrasted with the suggested method. When compared to more traditional methods, the proposed solution fares quite well.

Keywords—Garson Purned (GP), Extreme Learning Machine (ELM), Adaptive Histogram Equalization (AHE).

I. INTRODUCTION

The agricultural sector employs 70% of India's labor force. Farmers today have a wealth of choices when it comes to selecting high-quality crops and effective pest management. The quality and quantity of a harvest are both negatively impacted by plant illness. Researchers into plant diseases frequently look at the outward symptoms to learn more. Paying close attention to plant health and disease detection is crucial for successful crop production on the farm. Once upon a time, plant illnesses were manually analyzed, and disease surveillance was performed, by a professional specialist. It takes a lot of effort and time to complete. Plant diseases can be diagnosed using image processing methods. Infected plants show symptoms mostly in their leaves, stems, and fruits. Scientists investigate the origin of a plant's ailment by analyzing damaged leaves. This approach provides a primer on how to use image processing in plant pathology to identify diseases. Diseases of plants can be difficult to diagnose from their leaf symptoms alone. The vast quantity of cultivated plants and the intrinsic variability among them make accurate disease diagnosis difficult, even for experienced agronomists and plant pathologists.

As was previously said, a computationally automated approach to plant disease identification and diagnosis would be a huge help. be an indispensable tool for the agronomist entrusted with making these diagnoses through visual inspection of diseased plant leaves. Farmers in locations without the necessary infrastructure for the purpose of providing ideas in regards to agriculture and plant diseases could benefit greatly from such a system if it were available via an easy-to-use mobile application. The technology could be used with autonomous agricultural vehicles to help with the early and precise location of Phyto pathology concerns across the cultivation area in the case of large-scale cultivations. If the system were highly successful at detecting and diagnosing specific diseases in natural settings (that is, in the cultivation field) and was controlled by an appropriate interface, user-friendly mobile application, then all of these benefits would be realized in the specific situation of wheat plants. Farmers in less-accessible areas may lack the means to accurately diagnose plant diseases. No one from the community cares enough about the disease to visit the agriculture department. Our primary goal is to use image processing and machine learning to identify the invasive disease by analyzing the plant's outward appearance. Crop failure or plant disease increases the likelihood of famine. There is a lack of knowledge on how to prevent sickness, treat illness, and eliminate pests in many of the world's least developed nations. Major causes reducing food supply include inadequate disease control, harsh climate change, and hazardous diseases. Increased crop yields, reduced environmental impact, and shortened times from harvest to table are all possible thanks to the tools made available to farmers thanks to technological advancements. Methods such as polymerase chain reaction (PCR), mass spectrometry (MS), gas chromatography (GC), hyper spectrum techniques (HST), and thermography (T) are all examples of laboratory-based approaches to disease diagnosis. These methods, however, are laborious and time-consuming. Weed and pest identification, disease analysis and treatment, and improved crop yields are just some of the many uses for precision agriculture. A farmer employs pesticides to lessen the impact of pests and diseases on his crops and

boost production. Farmers and agricultural businesses are suffering as a direct result of crop diseases, which have led to decreased output and severe financial losses. This highlights the significance of accurate diagnosis and assessments of sickness severity. The health of a farming system relies on early detection of plant diseases. Vigilance and sharp eyesight are essential traits for any farmer who wants to see the first signs of plant disease. On the other hand, this approach can be costlier and less precise with large-scale crops. Farmers in places like India may find it difficult and costly to transport a specimen to an expert. This system provides a comprehensive overview of machine learning classification techniques that have been effectively applied to the identification and categorization of plant diseases.

II. LITERATURE SURVEY

The 2012 ImageNet Large Scale Visual Recognition Challenge (ILSVRC) was won by AlexNet [1], which is widely regarded as a notable milestone in the field of DL. As soon as the problems were discovered, new designs emerged to fix them. These algorithms and designs were rated based on their effectiveness in several different areas. Several methods, including data collection and visualization of mappings, are addressed [2] for implementing DL models. The advancement and improvement of DL architectures have aided in the fields of image detection and classification. These designs have been put to use in a wide variety of contexts, including agriculture. In [3], for instance, the author successfully classified leaves from 33 species using a convolutional neural network (CNN) and a Random Forest (RF) classifier. According to CA, it holds true 97.5% of the time. Unfortunately, it wasn't great at seeing in cloudy circumstances [4]. Deep convolutional neural networks (CNNs) have also been used to conduct leaf and fruit counts. Author-modified CNN was implemented, and VGG 16 was employed, for crop classification. The proposed system employed a three-unit LSTM in conjunction with CNN and the RGB histogram method. Training and validation loss and accuracy were not discussed in [5]. Many different plant species have also benefited from the DL identification method. Utilizing a custom-tailored version of CNN. The proposed system used the AlexNet infrastructure. The need for crop protection against plant diseases is critical in order to meet the rising need for both high-quality and abundant food in light of the world's rapidly expanding [6] population. Previously, it was suggested that reliable sensors be used to keep tabs on a plant's health and disease status in the wild. The high cost of equipment and the dearth of experienced staff mean that plant disease diagnosis utilizing sensors would only benefit a portion of farmers. [7] The typical success rate of feature retrieval for disease identification in sugarcane leaves. Diseases in maize leaves were detected using texture analysis by generating the image's grey level co-occurrence matrix and extracting colors from [8] that. In recent research, leaf vein patterns were analyzed using neural networks to distinguish between three different kinds of beans. In the end, the proposed system were able to evaluate disease recognition

in tea leaves with an accuracy of 92% using feature extraction and the Neural Network Ensemble (NNE) [9]. Also, the proposed approach has experimented with plant leaf image-trained convolutional neural networks for disease detection. These works have considerable constraints, such as a single harvest limit. Another problem with replication is that the underlying datasets used in the studies are sometimes unavailable. Recent advances in AI and CV have opened the door to the possibility of new approaches to old problems. [10] These solutions offer higher forecast accuracy than conventional approaches, which in turn leads to smarter choices. Due to advancements in processing power, DL techniques can now be used to swiftly solve complex problems. There have been significant discoveries made in this field as a consequence of research. DL has established the gold standard for classifying land covers, and it has the potential to revolutionize technology in many other areas as well. [11] Multiple deep neural networks (DNNs) have yielded encouraging results when applied to hyper spectral analysis. Convolutional Neural Networks (CNNs) have proven their worth in a variety of applications, such as computer vision (predicting the size of an object in a scene) and agriculture (crop categorization, fruit counting, yield prediction, disease detection, and general vision). [12] In these methods, both the AlexNet and GoogLeNet topologies fared exceptionally well. Performance can also be boosted by pre-training networks. As demonstrated in, conventional machine learning techniques have seen widespread application in the field of disease diagnosis. Plant rings of healthy and sick rice with bakanae are separated using SVM classifiers, as suggested in [13]. The new method was favored by the authors in terms of time and effort expended because it was more objective than traditional eye evaluation. Three sets of classifiers and five diseases that can affect soybean plants were investigated in a separate study to determine the extent to which human intervention can be intervention. Strategies like k-nearest neighbors, SVMs, and probabilistic ANNs [14]. The economic value of crops is reduced when plant diseases are present. Food shortages become more likely when efforts to identify plant diseases take too long [15]. It is critical for agricultural management and decision making that plant diseases be accurately diagnosed quickly. In recent years, there has been a rise in interest in the detection of plant diseases. Lesions or scars on the leaves, stems, flowers, or fruits may appear on plants that are suffering from a disease. Most abnormalities have recognizable symptoms that can be traced back to a specific disease or pest. When it comes to identifying plant illnesses, the leaves of the plant are invaluable [16]. CNN's success in the disciplines of object recognition and image analysis has made it the most often used classifier for image recognition. [17] The first use of deep learning techniques was in the recognition of plant images, namely the veins of leaves under a microscope. [18] used a deep CNN to undertake symptom-based study. The identification of four diseases that can destroy cucumbers. After the fungus had been correctly identified morphologically, they were extracted and grown in a lab. Genetic material, transmission elements, and host range [19] were used to identify viruses, while biochemical

testing was used to identify bacteria. Diagnostics for plant diseases have become much more precise due to the recent developments in molecular biology and biotechnology. The advantages and disadvantages of invasive methods have recently been integrated [20] with non-invasive methods. Tools like polymerase chain reaction and fluorescence microscopy are also widely used. Fluorescence labelling by in-situ hybridization. Hyper spectral imaging's benefits have allowed for the creation of cutting-edge measures for plant safety. The topic of "what role does hyper spectral photography play in bands in distinguishing cancerous from noncancerous plants" has been mulled over by a slew of cutting-edge experts [21][22]. This dynamic interpretation of hyper spectral data aims to improve coverage and speed up the process of diagnosing plant illnesses.

III. PROPOSED SYSTEM

India loses almost 35% of its annual crop yield every year because of plant diseases. It is still difficult to make an accurate early diagnosis of plant diseases due to a shortage of laboratory equipment and personnel. The suggested system uses this strategy to explore the feasibility of using computer vision techniques for large-scale, early diagnosis of plant diseases. The lack of suitable large-scale non-lab datasets remains as a significant barrier to the development of vision-based plant disease diagnosis methods.

A. Preprocessing

Better prediction decisions can be produced from raw photos using High-Resolution (HR) images. A higher-prediction of plant diseases using high-resolution images is more often accurate than a low-resolution image. HR images enable the development of computerized diagnostic tools that support farmers in early problem detection and decision-making. It also enables more precise image segmentation and object detection. An easy example of a deterministic, non-learning-based picture preprocessing technique are high pass filters, which have difficulty keeping the enhancement level consistent over a greater variety of images sufficient fluctuation [23]. One method to enhance these techniques is to make them input-adaptive. When applied to raw photos, which frequently exhibit high levels of unpredictability, this might be highly effective.

1) AHE

AhE is a method for enhancing contrast that modifies only a localized area of an image (the tile). By generating and applying a tile-specific contrast transform function, we can increase contrast (HE), which is an improvement above histogram equalization. When there are areas of an image that are significantly darker or brighter than the remainder of the image, this approach has a hard time adapting to those differences. This might be especially handy for plant photography, as contrast vary depending on where you look in the frame. However, using the AHE method increases noise and improves contrast in the image's almost constant regions.

2) CL-SH

It is useful to use a combined method like Combining CLAHE with an additional sharpening step, often known as CL + SH. This technique for preparing composite images was conceived as a result of two sources of motivation. First, by using a clip limit, CLAHE improves an image without introducing noise; yet, this constraint also leaves room for improvement in the future. A second consideration is that noise reduces image clarity even when leads to a complete, unrestricted enhancement. As a result, CLAHE may be able to improve and lower image noise by the sequential application of these two techniques. The quality of the image may then be further enhanced without introducing distortion during the subsequent phase of processing.

B. Segmentation

To identify the diseased leaf parts of the image, Kapur's thresholding-based segmentation technique is used during image segmentation. It is used to select the best thresholds for segmenting photos. It primarily depends on the image histogram's entropy and probability distribution [24]. It is used to identify the ideal threshold (th) values that maximize overall entropy. The bi-level instance is represented by the objective function of Kapur's problem is shown in Eq (1).

$$G_{Kapur}(th) = I_1 + I_2 \quad (1)$$

where the definitions of entropy I_1 and I_2 are:

$$I_1 = \sum_{h=1}^{th} \frac{S_{i_h}}{\varphi_0} \ln\left(\frac{S_{i_h}}{\varphi_0}\right) \text{ and } I_2 = \sum_{h=th+1}^M \frac{S_{i_h}}{\varphi_1} \ln\left(\frac{S_{i_h}}{\varphi_1}\right) \quad (2)$$

$\varphi_0(th)$ and $\varphi_1(th)$ are the probability distributions for the class labels A_1 and A_2 $\ln(\cdot)$, respectively, and S_{i_h} is the likelihood distribution of the intensity level. The natural logarithm is written. As stated in Eq. (2), the objective function for multilevel thresholding is modified.

$$G_{Kapur}(TH) = \sum_{h=1}^n I_h \quad (3)$$

where the vector $TH = [th_1, th_2, th_{(n-1)}]$ contains a variety of threshold values. Since each entropy is calculated using the corresponding (th) value, Eq. (3) is expanded to include n entropies.

$$I_n^a = \sum_{h=th_{n+1}}^M \frac{S_{i_h}}{\varphi_{n-1}} \ln\left(\frac{S_{i_h}}{\varphi_{n-1}}\right) \quad (4)$$

C. Extraction of Features

The identification of an object depends heavily on feature extraction. The use of feature extraction in image processing is widespread. The characteristics that can be employed in the detection of plant diseases include color, texture, morphology, edges, and others. The term "texture" refers to the image's hardness, roughness, and color distribution. Infected plant areas can be found using it as well.

1) Co-occurrence Color Method

This technique uses both color and texture to give an image its own distinctive traits [25]. To do it, the RGB image is translated into the HSI format.

$$I = \begin{cases} \text{Theta, if } D < F \\ 360 - \text{Theta, } D > F \end{cases} \quad (5)$$

$$P = 1 - \frac{3}{(T + F + D)} [\min(T, F, D)] \quad (6)$$

$$H = \frac{1}{3} (T + F + D) \quad (7)$$

For the purpose of computing texture statistics, an SGDM matrix is constructed, and the GLCM technique is used to compute the feature.

2) H and B Compomenets extraction of leaf colors

Anisotropic diffusion is used to enhance the input image before color separation, protecting the data of the affected pixels. To distinguish the grape leaf from the surrounding area, we use the H and B components of the HIS and LAB color spaces. Disease leaf colors can be identified using a GP-ELM-RNN trained using back propagation.

D. Performance Evaluation of the Model

1) RNN

RNNs are feed-forward neural networks that strive to reduce training error by modifying the weights assigned to each neuron's inputs. RNNs output layer should be a recreation of the input layer's data pattern. Since RNNs' primary purpose is data compression, the number of neurons in the network's input and output layers is much larger; these layers each include K neurons that correspond to K characteristics in the training data. There are three hidden layers in between the input and output layers in Nielsen's original RNN design. In this model, the neurons in the buried layer make use of $\tan i(c_n \theta)$ activation functions, and the output layer neurons use linear or sigmoid functions. The middle-hidden layer uses a staircase-like activation function (taking $n = 3$ in the $\tan i$ activation function). To achieve compression, this activation function has discrete steps, therefore it can divide continuously distributed data.

While RNN's first usage was in data compression, the network's versatility has now seen it modified for other purposes, such as anomaly detection. Even if the training data in this case is unlabeled, the proposed system still needs a training and testing phase because RNN is a semi-supervised learning technique. For anomaly detection, a single dataset serves both testing and training needs. The RNN computes the outlier factor while the dataset determines the input weights for each neuron during training (VG) for every single observation made throughout testing phase in accordance with Equation (8).

$$VG_n = \frac{1}{k} \sum_{e=1}^k (w_{he} - r_{he})^2 \quad (8)$$

The typical error in reconstruction for a set of k features define VG_n . Outliers are defined as points with a high VG value.

2) ELM

An ELM can be thought of as a simplified version of a feed-forward neural network with a single hidden layer. SLFN and ELM diverge in how they update the weights of the neurons in the hidden layer and the output layer. The weights of the SLFN's input and output layers are changed using back-propagation after being randomly seeded at the outset. The hidden layer's weights in ELM are assigned at random and are never modified, even when the model is trained. ELM is faster than SLFN since only one layer's weights need to be updated in contrast to both layers in SLFN.

3) GP-ELM-RNN

The original RNN, which has three hidden layers and uses the back-propagation method to update the weights of the neurons, has a depth of three. While this method may find abnormalities fast and effectively for small datasets, its performance suffers when applied to large datasets when compared to other techniques. RNN is not suitable for use with most large datasets since its back propagation approach requires iteratively modifying a large number of weights. Since ELM only needs to set the weights of a single layer per one processing cycle of the dataset, it is a significantly faster alternative to back propagation as the learning method. This means that ELM-RNN can complete its tasks significantly more quickly than a regular back-propagation-based RNN [26]. Since there is just one hidden layer in an ELM-based RNN, the problem of keeping track of the number of layers in an RNN is eliminated. The number of neurons in the buried layer can still be determined with the help of Garson's method for removing unnecessary ones. Neurons, on the other hand Garson's technique eliminates neurons from the hidden layer that have less than a threshold amount of influence on the output. Here's how it goes down: The SLFN requires both input neurons and output neurons in its hidden layer, denoted by the symbol h . The hidden layer neuron input matrix is multiplied by the neuron output vector to yield

$$a_{he} = \begin{bmatrix} f(x_1 \cdot c_1 \cdot w_1 + d_1) & \dots & f(x_i \cdot c_i \cdot w_i + d_i) \\ \vdots & \ddots & \vdots \\ f(x_1 \cdot c_1 \cdot w_K + d_1) & \dots & f(x_i \cdot c_i \cdot w_K + d_i) \end{bmatrix} \begin{bmatrix} r_{11} \\ \vdots \\ r_{K1} \end{bmatrix} \quad (9)$$

The following formula is used to determine the impact each input on the hidden layers' result:

$$t_{he} = \frac{|a_{he}|}{\sum_{h=1}^K |a_{he}|} \quad (10)$$

The effect, the proposed system can calculate the influence of each neuron in the hidden layer on the final result:

$$P_n = t_{1n} + t_{2n} + t_{3n} + \dots + t_{Kn} \quad (11)$$

Finally, each buried layer neuron's relative significance is determined by

$$TH(n) = \frac{P_n}{\sum_{h=1}^l P_n} \times 100 \quad (12)$$

The proposed approach establishes the pruning threshold and eliminate the hidden layer neurons that fall below it. The harmonic mean can be used to determine this threshold value.

$$Threshold = \frac{i}{\sum_{n=1}^l \frac{1}{TH(n)}} \quad (13)$$

After removing the insignificant hidden nodes, the proposed method will have a new hidden layer matrix that can be used with the ELM learning method. By inverting the output vector and computing the reconstruction error using Eq. (13), the proposed system obtains the Recurrent Neural Network (RNN) model.

IV. RESULTS AND DISCUSSION

Agriculture is crucial in India because of the country's rapidly growing population and increased demand for food. Therefore, increases in agricultural output are required. Diseases caused by bacteria, viruses, and fungi contribute significantly to the poor harvest. Plant disease detection methods can be used to halt this. Since machine learning techniques place a premium on the outcomes of specific tasks, they can be used for disease diagnosis.

TABLE 1 PERFORMANCE METRICS OF THE MODELS.

MODEL	Precision	Recall	F1-Score	Accuracy
ELM	87.39	91.26	90.72	85.38
ELM-RNN	85.76	92.45	88.73	90.28
GP-ELM-RNN	92.65	93.27	93.58	96.39

The evaluation metrics for various methodologies are shown in Tables 1 and using a cross-validation procedure with 10 iterations. As a starting point, the proposed system utilized the established classifier from the imbalance dataset. Therefore, the baseline's training data contains no replicated or produced data. A closer examination indicates that, as shown in table 1, the GP-ELM-RNN-based technique beats ELM and ELM-RNN in terms of every precision, recall, F1-score, and accuracy metric that is particularly important for the task at hand. Accuracy ignores the smaller sample size for each minority group, making it a poor statistic for an uneven data set. Accuracy and recall have traditionally used in scenarios like this to evaluate a classifier's performance. The recall of our GP-ELM-RNN-based method is considerably higher than the baseline and just slightly higher than ELM and ELM-RNN. The proposed system may infer that the GP-ELM-RNN-based technique is successful at identifying the positive class because this is our major objective.

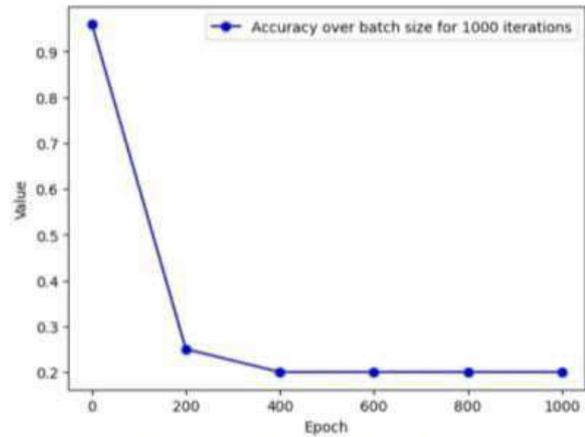


Fig. 1. GP-ELM-RNN Learning Rate

The following settings were utilized to train GP-ELM-RNN for producing novel plant leaves on the whole Plant Village dataset: a learning rate of 4×10^{-4} , a minibatch size of 6, and an optimizer. In Figure 1, the learning curve is depicted.

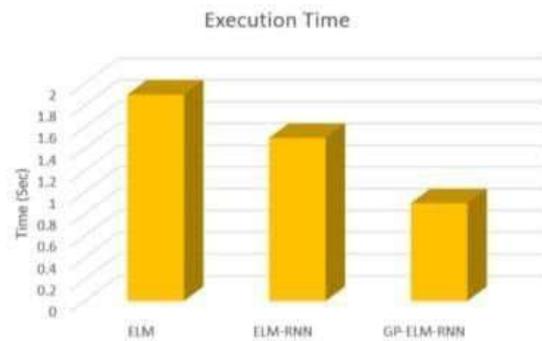


Fig. 2. Execution Time of the Models

Figure 2 depicts a comparison of the performance analysis's three classifiers' execution times: ELM, ELM-RNN, and GP-ELM-RNN. When compared to a naive bayes classifier, the GP-ELM-RNN classifier runs faster.

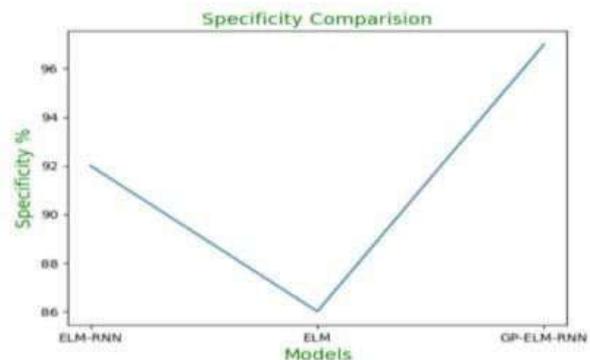


Fig. 3. Specificity Result of the Models

Accuracy, sensitivity, and specificity are three metrics that this system measures in order to assess how well various algorithms perform. Figure 3 depicts a specificity performance comparison of various methods.

V. CONCLUSION

Although crop diseases pose a serious risk to global food security, they are notoriously difficult to detect early on because the essential infrastructure is lacking in many parts of the world. Since the advent of accurate methods, the area of leaf-based image classification has made tremendous strides. In this system, Random Forest is used to classify the generated data sets into those containing either healthy or damaged leaves. In the suggested method, the proposed approach incorporates the steps of creating a dataset, extracting features from that dataset, training a classifier, and classifying the data. A comparison of the suggested method with ELM and ELM-RNN is made. When compared to simple approaches, the proposed methodology performs well and yielded an accuracy of 96%.

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About the Book

Newspaper and Magazine Design is the subject of TYBAMMC, Journalism Semester VI. The topics explained in the book are according to the latest syllabus designed by the University of Mumbai. In this subject, students will get a clear idea of the entire process of creating a newspaper and magazine in its practical form. This is the subject that revolves around the basics of Publication and Design. The objective is to teach students all the topics like Layouts, Designing, Editing and Terminology, Different Typography elements and Visual Aids in Designing. The book also has reference illustrations, figures, and examples that will help students to quickly grasp the topic. The subject is a project based and practical in terms of teaching and learning. A student will undergo a viva exam instead of the traditional written exam. Keeping in mind all the aspects of the same, the book is written in a simple and lucid language for the clear understanding of the student.

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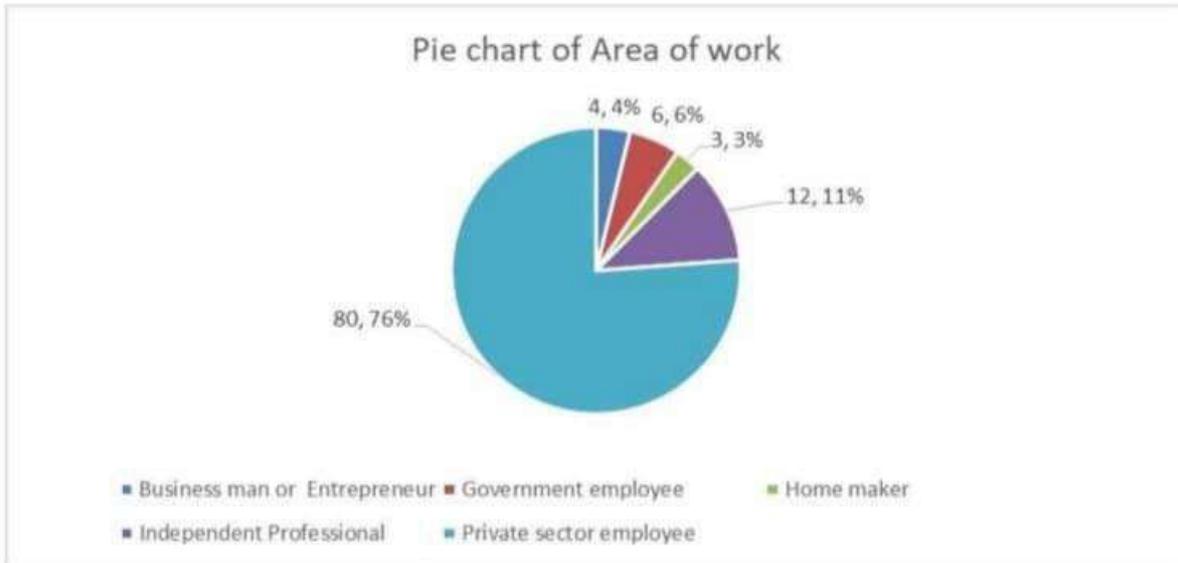
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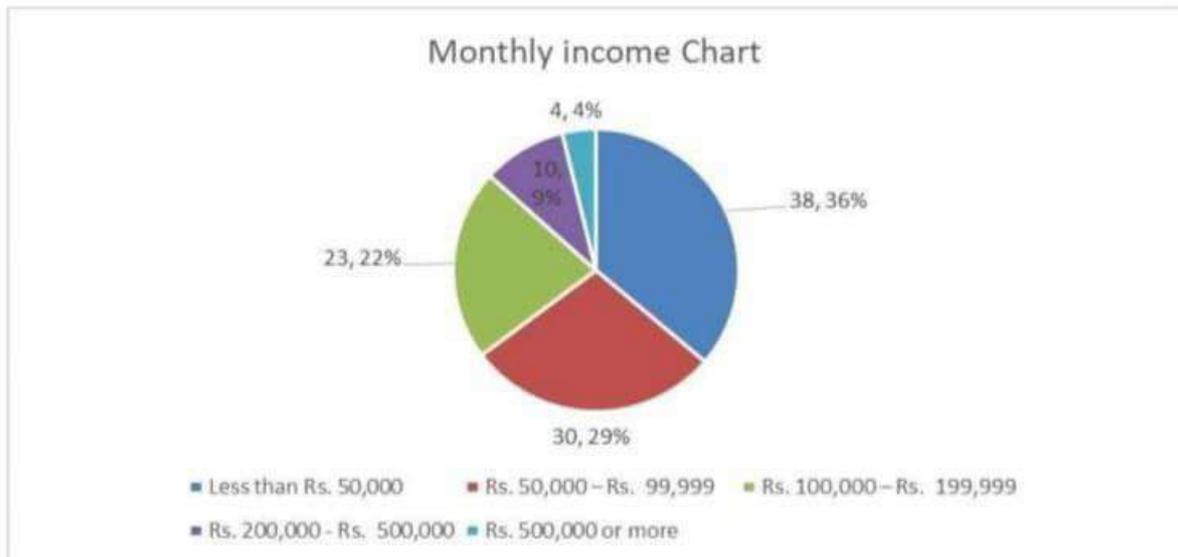
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Q5. Monthly Income Details

Monthly income	Frequency	Percentage
Less than Rs. 50,000	38	36.19%
Rs. 50,000 – Rs. 99,999	30	28.57%
Rs. 100,000 – Rs. 199,999	23	21.90%
Rs. 200,000 - Rs. 500,000	10	9.52%
Rs. 500,000 or more	4	3.81%
Total	105	100.00%



HYPOTHESIS TEST

H0: There is no significant variation in investors perception towards Mutual Fund & Other Investment Avenues

H1: There is significant variation in investors perception towards Mutual Fund & Other Investment Avenues

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Since observations are in terms of frequencies, Chi-square test is used to test the Null Hypothesis.

The SPSS **Chi-Square Tests** result table is as below.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	17.873 ^a	5	.003
Likelihood Ratio	17.252	5	.004
Linear-by-Linear Association	11.399	1	<.001
N of Valid Cases	1294		

a. 1 cells (8.3%) have expected count less than 5. The minimum expected count is 4.53.

Here the Chi-square value is $17.873 > 10.07$ (Table value) \rightarrow Ho is rejected at 5% los. The test is significant as the p-value = $0.003 < 0.05$

Conclusion: There is an association between the investor's perception towards Mutual Fund & Other Investment Avenues at 5% los.

FINDINGS AND SUGGESTIONS

From the above research it is concluded that the variation in investor perception is due to the knowledge and understanding towards the investment avenues available to investors Although the new generation is slowly and gradually attracted towards the Stock market, those investors who do not have time to directly invest in stock market are finding a way through Mutual funds where a |Asset Management Company does the Professional work of investing in stocks and securities. Now days the investor in Mumbai has various alternatives as well as opportunities to invest and so mutual funds are the best alternative substantially adopted by them.

CONCLUSION

Individual investor or Retail investors is the spine of financial market, growth of financial market is increased substantially. There are sea changes in understanding of investors and their perceptions towards investing in various options available to them. This study shows the appetite of individual investors who are non-professional investors and their perceptions towards investing in a particular avenue available to them. Individual investors are always trying to get quick money and that will be possible with the help of investing in mutual funds and equity linked saving schemes when the market conditions are favourable and the other long term avenues are helpful when the market conditions are not favourable.

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TECHNICAL ANALYSIS USING A CHART PATTERN TO PREDICT BSE STOCK PRICES

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Abstract:

India's leading financial centre, the Bombay Stock Exchange (BSE), is a vital indicator of the country's economic health. The banking industry in India is essential to the country's economic expansion, and understanding its stock market dynamics is essential to make wise investing choices. This study explores whether chart patterns, a key element of technical analysis, can predict stock price movements of the top 5 BSE-listed banking companies. Analyzing a 2-year historical dataset, the study examines the prevalence and predictive power of specific patterns like head and shoulders, double bottoms, double top and cup and handle patterns. While acknowledging limitations and external market influences, the research aims to assess the value these patterns offer for navigating the Indian market. Through success rate analysis and quantitative methods, the study seeks to provide a nuanced understanding of technical analysis' potential utility. Ultimately, it emphasizes the importance of considering technical factors to make wise investing decisions. This study investigates the use of chart patterns to predict stock prices in the Bombay stock exchange.

Keyword: BSE, Technical Analysis, Chart Pattern, Stock Market.

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Introduction: The Bombay Stock Exchange, founded in 1875 as the pioneer Share and Stock Brokers' Association, boasts a rich history as India's first and largest securities market, listing over 5,300 companies and ranking among the world's biggest exchanges alongside NYSE, Nasdaq, and others. Mumbai's BSE, a key player in India's capital markets, facilitates trading in equities, currencies, debt, derivatives, and mutual funds.

In technical analysis, patterns formed by security price movements on charts offer clues about future direction. These patterns, identified by connecting

highs, lows, or closing prices, aim to forecast price reversals or continuations. From simple trend lines to complex double, specific formations like head and shoulders (with two smaller highs around a larger one), double tops (failed attempts to break resistance), double bottoms (failed attempts to break support) and Cup and handle (U-shaped price rise (cup), brief consolidation (handle), then bullish breakout for potential trend continuation) all signal possible changes in price trends. Technical analysts seek to predict future market movements by recognizing these patterns.



This study investigates the effectiveness of chart patterns in evaluating the performance of five major Indian banking stocks (HDFC Bank, ICICI Bank, SBI, Axis Bank, and Kotak Mahindra) over the 2022-2024 period on the Bombay Stock Exchange. By analyzing their hourly closing prices, the research aims to obtain insightful knowledge about their market behavior within the context of India's booming Banking sector.

Review of Literature: In "A Neural Network Approach for the Analysis of Control Chart Patterns," Cheng (1997) proposes a novel use of neural networks for automated pattern recognition in quality control. This approach tackles the challenge of manually identifying patterns in control charts, critical for detecting process deviations. Cheng demonstrates the effectiveness of neural networks in automating this task, potentially replacing traditional manual methods with improved accuracy and efficiency. While promising, further validation and comparisons across various industrial settings are needed to confirm its robustness and real-world applicability.

In their exploration of charting patterns on price history, Anand, Chin, and Khoo (October 2001) unlock valuable insights for financial market analysis. Their research delves into the identification and interpretation of key patterns like head and shoulders, triangles, and flags, which serve as crucial signals for traders and investors. By analyzing historical price data and chart patterns, the authors aim to uncover potential trends and predict future price movements. This work not only enriches the field of technical analysis but also offers practical applications for individuals navigating trading and investment decisions. Overall, the research provides a comprehensive overview of charting patterns and their significance in deciphering market dynamics.

Masood and Hassan's (2010) paper offers a critical review of using Artificial Neural Networks (ANNs) for control chart pattern recognition. They meticulously analyze ANN architecture choices,

feature extraction methods, and performance evaluation specific to this application. Highlighting challenges like overfitting, dimensionality, and data imbalance, they emphasize their importance for reliable and efficient ANN-based systems. This useful tool for scholars and practitioners seeking to leverage ANNs in quality control provides insights for future advancements in the field.

Bag et al. (2012) propose an automated control chart pattern recognition expert system in their comprehensive paper. Detailing the planning and execution methodology, the system focuses on accurately identifying various patterns in common statistical process control charts. Through experimental results, the authors showcase its effectiveness in efficiently recognizing diverse patterns and anomalies, offering valuable insights into quality control. This research presents a promising solution for automating pattern recognition tasks, potentially streamlining industrial processes.

In Hachicha and Ghorbel (2012) conducted a comprehensive survey of control-chart pattern recognition research from 1991 to 2010. They proposed a new classification scheme to organize and analyze the vast literature, and systematically reviewed and categorized existing approaches. For researchers and practitioners, this analysis is a useful resource as it offers insights into the development and trends of the area. The authors also synthesized findings from numerous studies to contribute to theoretical knowledge in quality control and offer practical guidance for developing and implementing pattern-recognition systems in industry. Their comprehensive survey is a key reference for understanding the state-of-the-art in detecting anomalies and patterns within control charts.

Objective of the study:

- To understand the various Chart patterns.
- To know the selected banking stock price pattern during study period.



- To analyze charting patterns for buy/sell decisions in chosen stocks.
- To offer suggestions for investors to make better trading decisions.

Research Methodology: This study takes an analytical approach to examine the performance of five prominent Banking companies - HDFC Bank Ltd., ICICI Bank Ltd., State Bank Of India, Axis Bank Ltd. and Kotak Mahindra Bank Ltd. - on the Bombay Stock Exchange. Instead of generating new data, it dives into existing hourly closing prices from 2022 to 2024. By using technical tools chart patterns like Head and Shoulder pattern, W or Double bottom pattern, M or Double top pattern and Cup and Handle Pattern, the study aims to uncover hidden patterns and trends in these companies' performance. This valuable information can then be used by investors to make informed decisions about future stock movements, while the Banking sector itself can gain deeper insights into these companies' strengths and weaknesses, ultimately helping both make better choices for continued growth and success.

Tools and techniques of data analysis:

Head and Shoulder pattern: The head and shoulders pattern is made up of three peaks and two troughs. The left shoulder is the name given to the first peak. The pattern's tallest peak, referred to as the head, is the second peak. The right shoulder is the name of the third peak. The two troughs are called the neckline.

In a bearish head and shoulders pattern, the price makes a new high, then falls back down to the neckline. The price then makes another high, but it does not reach as high as the first high. The price then falls back down to the neckline again and breaks below it. This break below the neckline is a signal that the price is likely to continue to fall.

W or Double bottom pattern: A technical analysis chart formation that resembles the letter "W" is called a double bottom pattern. It happens when the price of

a stock falls to a low point, rebounds, falls again to a similar or slightly lower low point, and then rebounds again. This pattern suggests a possible change in direction from a downtrend to an uptrend, as buyers may be stepping in at the support levels created by the lows.

M or Double top pattern : The M pattern is referred to as a "double top" or "W-M formation", reflects a bearish trend reversal that typically forms at the peak of an uptrend. Three candlesticks are included:

First candlestick: A long bullish candlestick with a high wick, indicating strong buying pressure.

Second candlestick: A smaller bearish candlestick with a lower high than the first candlestick, suggesting weakening buying momentum.

Third candlestick: Another long bearish candlestick with a lower high than the second candlestick, confirming the reversal and potential downtrend.

Cup and Handle Pattern: The pattern of the cup and handle represents a bullish continuation that typically forms after an uptrend. It consists of three main parts:

The Cup: This is a U-shaped pattern created by two price swings that resemble the rounded bottom of a cup. The first swing moves up from the current price, then dips down, and then moves back up to a level near the starting point. This first swing stands for the early upward trend and a period of consolidation.

The Handle: A smaller dip follows the cup's downward curve and resembles the handle of a cup. It shouldn't be too deep, ideally staying within the upper third of the cup's depth. The handle represents a brief period of consolidation or pullback after the initial uptrend.

The Breakout: This occurs when the price breaks above the neckline, which is a horizontal line drawn across the top of the cup. A confirmed breakout strengthens the bullish signal, suggesting a continued uptrend.

Data Analysis and Interpretation:

HDFC Bank Ltd. :



Figure 1. Head and Shoulder Pattern

From Figure 1, it can be observed that, the left shoulder is formed at around ₹1,630.00. The head is formed at around ₹1,757.00. The right shoulder is formed at around ₹1,700.00. The price has broken below the neckline, which suggests that the price will probably keep dropping.

ICICI Bank Ltd.:



Figure 2. W or Double Bottom Pattern

From Figure 2, it can be observed that, the two lows of the potential double bottom pattern are around ₹980 - ₹985. The neckline, which is a horizontal line connecting the two peaks of the lows, is around ₹1012. The price has broken above neckline with the strong green candle. The W pattern suggests that the downtrend is losing momentum and that buyers are gaining control.

State Bank Of India :



Figure 3. M or Double Top Pattern

From Figure 3, it can be observed that, the two high of the potential double top pattern are around ₹568 - ₹564. The neckline, which is a horizontal line connecting the two lowest points of the high, is around ₹556. The price has broken below neckline with the strong red candle. its confirmed, price has broken neckline and losing upside momentum. The M pattern suggests that the uptrend is losing steam and that sellers are gaining control.

Axis Bank Ltd.:



Figure 4. Cup and Handle Pattern

From Figure 4, it can be observed that cup and handle pattern forming. The cup is starting to form, with the price making two upward swings followed by a consolidation period. The handle is fully formed, as the price has taken 0.61% support on fibonacci retracement levels.

Kotak Mahindra Bank Ltd. :

Figure 5. M or Double Top Pattern

From Figure 5, it can be observed that, the two high of the potential double top pattern are around ₹1926 - ₹1920. The neckline, which is a horizontal line connecting the two lowest points of the high, is around ₹1890. The price has broken below neckline with the strong red candle. its confirmed, price has broken neckline and losing upside momentum The M pattern suggests that the uptrend is losing steam and that sellers are gaining control.

Findings:

- Both Figure 1 and Figure 5 show potential double top patterns with breakouts below the neckline, hinting at a downtrend and the potential for further price drops.
- Figure 2 shows the price has broken above the neckline with a strong green candle, suggesting an uptrend. This bullish signal suggests continued price appreciation.
- Figure 3 shows the price has broken below the neckline with a strong red candle, suggesting a downtrend. Bearish signal suggests price continuation lower.
- Figure 4 shows a potential cup and handle pattern forming, which could indicate a bullish continuation.

Suggestions:

- Figure 1 shows Consider shorting the stock or taking profits on long positions.

- Figure 2 shows Consider buying the stock or going long on existing positions.
- Figure 4 shows Wait for the cup and handle pattern to complete before making a decision.
- Figure 5 shows Consider shorting the stock or taking profits on long positions.

Limitations:

- This study examines into 2 years of selected stock data.
- Secondary data was used for the research.

Conclusions:

India's banking sector on the BSE has been a strong performer, driven by global digitalization and domestic banking outsourcing demand. This study evaluated the performance of 5 major Banking stocks listed on the BSE by employing various chart patterns, including head and shoulders, double bottom/top, and cup and handle. The analysis covered a two-year period and identified potential trends for each stock.



While some stocks showed promising bullish signals like potential cup and handle patterns, others displayed bearish signals like double top patterns with breakouts, indicating potential downtrends. The limitations include the use of a relatively short timeframe and reliance on secondary data. However, the findings offer valuable insights for investors, suggesting potential buy/sell decisions based on the identified chart patterns. Investors should carefully consider the limitations of this study and their own risk tolerance before making any trading decisions based on these findings.

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