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'SUSTAINABLE ENGINEERING -A TOOL FOR SUSTAINABLE AGRICULTURE'

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ABSTRACT
Agriculture engineering is the field of study of crops and application of engineering techniques for agriculture purposes. It is essentially the development of technology and is related to mechanization of production and post-production of agriculture using both conventional and non-conventional energy sources. It also AIMS at optimization of irrigation and post-harvest. The objective is to provide an app and mean for the farmer which ensures there economic status and dignity it also AIMS at providing adequate quantity and quality food at low prices. This sub discipline of agriculture engineering includes agriculture structures agriculture surveying aquaculture forestry engineering ergonomics pesticides etc.

It benefits the crops by improvement of safety reduction of drudgery of labor, reduction of loss of crops, it offers increased efficiency and productivity. It helps improve soil quality and provides a better environment for crops to grow and transport of food. Use of artificial intelligence, robotics, machine learning, deep learning, sensors etc. increases productivity reduces cost , improves quality through Science technology and engineering.

The paper discusses about the sustainable Engineering as he tool for the future of agricultural engineering.

Keywords: Agriculture engineering, irrigation, agriculture surveying, aquaculture, artificial intelligence

OVERVIEW

Agriculture plays an important role in every countries growth from the very beginning. In earlier days the primary objective of humans was to arrange food for themselves by hunting. Later when people started growing crops it led to a surplus of food which enabled the people to focus on other activities. One of the most oldest forms of trade known to human kind was barter system which was first done for the exchange of food.

Agriculture has been of prime importance to Indian economy. It provides food to the ever growing population of India, apart from this it also provides raw material for the industries in India generates employment and is a major contributor to India's export, and the surplus production of food has allowed people to take up other essential activities.

Sustainable agriculture is the practice of producing crops in a way that meets the present need of the society and also caterer to the future needs. Sustainable agriculture includes practices that improve the quality productivity of the crops and also the profit gain from them. It also aims at saving natural resources for the future generation buy employing appropriate agricultural practices and increasing the natural resource base.Traditional agricultural practices are very tedious and can lead to resource wastage, whereas use of modern technology like AI, sensors, machine learning, deep learning, robots can make the job easier for humans. They reduce the labor requirement which reduces overall production cost. They also save soil and water. They provide sufficient quantity of water to the soil which leads to better quality products. When the crop is planted according to the soil type it improves soil fertility and general properties. It also reduces excessive use of fertilizers and pesticides which not only harm the crop and humans but also the soil quality. Supply of Adequate amount of resources leads to profitable, sustainable and quality produce which is otherwise not possible because of human errors. So in a nutshell modern technologies in agriculture can increase the yield, quality increasing the profit in ways which has least damage on society.

(*Source:* Vijay Kumar, Aseeya Wahid , Shilpa S Selvan and others-Scientist, ICAR – Central Institute of Agricultural Engineering, Bhopal-AMA-Volume 52, Issue 02, November, 2021)

OBECTIVE:

● To understand how the use of Technology in agriculture can improve the quality of the crops and increase the profitability. Reduce the tedious tasks involved in agriculture, human drudgery and eliminate the damages caused due to human errors.

REVIEW OF LITERATURE:

Heyi Zhang 2020 J. Phys.: Conf. Ser. 1699 012008 - concluded that "The development of agricultural engineering technology provides an important technical foundation for the realization of agricultural modernization, especially in the effective use of agricultural resources, the improvement of agricultural labor productivity, and the transformation of agricultural production and operation methods. Therefore, we must increase the promotion and application of agricultural engineering technology in various agricultural production and operation activities…"

According to **prof. John V Stafford** "Precision agriculture has generated a very high profile in the agricultural industry over the last decade of the second millennium—but the fact of 'within-field spatial variability', has been known for centuries. With the advent of the satellite-based Global Positioning System, farmers gained the potential to take account of spatial variability. The topic has been 'technology-driven' and so many of the engineering developments are in place, with understanding of the biological processes on a localized scale lagging behind. Nonetheless, further technology development is required, particularly in the area of sensing and mapping systems to provide spatially related data on crop, soil and environmental factors. Precision agriculture is 'information-intense' and could not be realized without the enormous advances in networking and computer processing power. Precision agriculture, as a crop management concept, can meet much of the increasing environmental, economic, market and public pressures on arable agriculture. By the end of the new decade, most arable enterprises will have taken on the concept on a whole-farm basis."

SN Jha, KK Singh, CR Mehtaand others opined that-" The future of agriculture revolves around producing and processing locally and trading globally. The improving of productivity and sustainability shall involve adoption of new age tools of sensor technology that leads to improved precision and automation using robotics, drones and AI for quality production and will have to be integral component of new agricultural engineering program. The tangible socio-economic impact of various mechanization and post-harvest technologies to farmers and other stakeholder who took backseat in the past. It now requires focused efforts with greater allocations and spreads in tools, implements and machineries. The post-harvest sector is even challenging but full of opportunities. The agri-food system is needed to be considered in entirety rather than pieces.'

Dr Laishram Kanta Singh ,-Krishi Vigyan Kendra- "Agricultural engineering is the cornerstone of agricultural progress, and its neglect could jeopardize a nation's long-term viability. Most of the nations that have recently called out for aid are those where the agricultural system has failed either because of a drought, an insect invasion, or a lack of agricultural input. Interestingly, given the resources and difficulties, agricultural engineering as a profession could have prevented the majority of these issues. The occupation has excellent potential to address the majority of issues affecting agriculture, particularly in emerging nations."

RESEARCH METHODOLOGY:

This research paper has based on secondary data. The required secondary data for completing the investigation will be collected mainly from published sources in academic libraries, records, books and journals, articles, government report, Economic survey of India, Agriculture census etc.

INTRODUCTION:

Agriculture is production or cultivation of crops and livestock for food and non-food purpose. Agriculture has been one of the key factors in development of settles human civilizations as the surplus of food enabled people to look after other things. Nowadays many new technologies are emerging which aim at increasing the productivity and profitability of crops. Agriculture

Drone Technology:

Drones can be very helpful in agriculture. Crop monitoring, crop health checking, livestock management, soil and field analysis, geo fencing, crop spraying and many more things can be performed using drones.

Drones help in checking for pest attacks, monitoring effects of weather conditions on crops etc. they make use of hyper spectral imagery to detect diseases in crops, create a approx. map of the field area etc. spraying of pesticides can be hazardous to the health of farmers and so spraying of pesticides is done by drones which not only avoids the health implications but also deliver the right amount of pesticide at the right time.

Artificial Intelligence Technology:

AI is the emerging technology which can prove to be a blessing in the field of agriculture. Detecting leaks or damage and optimizing automated irrigation systems, increase in water use efficiencies, crop health monitoring, yield mapping, intelligent pesticide spraying etc can be performed efficiently by using AI. All this can be performed through various algorithms like KNN, CNN, deep learning etc. these algorithms first train the model through labeled or unlabeled data, from which certain patterns are recognized or analysis is done. Then the model is fed with the testing data (which is already known to us) to check the accuracy, precision, F1 score, recall factor and to calculate the evaluation matrix. Then these models are applied to real time farms. Another way of incorporating Ai in agriculture can be through robots which can check the crops and provide useful advice to the farmers. Automated fruit-picking machine, watering robots, weeding robots and many more are being developed by various countries. The advantage of using the robots is that they can do their task at the right time in the right way (like exact amount of pesticide or water to be sprayed on crops at the right time) which not only increases the quality of crops but also helps in proper resource utilization.

Examples-

1. Classification of soil and suggesting the appropriate crop according to soil type can be done using algorithms like SVM, BT. It has been found that generally SVM gives the better results.

2. Efficient and automated irrigation can be implemented by using technologies like IoT, PLSR which can give efficiency up to 80%.

3. Precise weed detection can be done using techniques like computer vision with the help of GPU based evaluation matrix which have proved to be 70-80% precise.

Machinery:

Mechanization of agriculture is a very important step in the growth of agriculture. It can reduce human errors, the number of labor required on the field and make certain tedious tasks easy and simple. This overall leads to low cost quality crops which use fewer resources.

Examples-

1) Field or Seedbed Preparation
- Micro-controller based fixed rate seed planter.

- Leveling of land through laser.

- Seeding

2) Unmanned Automated Trans Planter
- Optical sensor based variable rate urea applicator

- Precise seed planting through smart tractors

3) Plant Protection
- Spraying pesticides through drone to avoid hazardous consequences.

- VRS system by using sensor

- Use of hyper-spectral or multispectral camera for spraying system

4) Harvesting/Threshing
- Automated crop harvester

- Automated threshing system

5) Solar Energy
- Harvesting solar energy by using nano fluids and nano coatings.

- hybrid energy harvesting system to maximize power generation by harvesting solar energy

- Solar power operated agricultural machines and tractor

6) Energy Management
- Using IoT to optimize the energy, like temperature management in greenhouse etc

7) Transportation of Agricultural Produce
- Smart trucks for transport of yield which maintain the right conditions like humidity, pressure, temperature etc for the crops to say fresh for longer

Soil and Water Conservation:

1) Soil Assessment
- Use of sensors to measure pH, porosity, mineral composition of soil

2) Erosion Assessment
- Using remote sensing for finding erosion. Also the use of multispectral imagery can also be employed for erosion analysis

3) Water Assessment and Watershed Management
- Use of geographical information systems to find and analyse drought.

- Sensor controlled watering to avoid water wastage.

4) Irrigation
- Automatic irrigation system based on IoT

- RGB imager-based crop and water stress determination system

Agriculture Processing:
Processing is the procedure of adding value tot the harvest. This includes making them ready in useable form, increasing shelf life, efficient packaging which does not harm the food and makes it easier to transport. Traditional processing methods like drying, sorting, storage, packaging etc can be very tedious and require more money, labor and resources.

Examples-

1) Drying
- Monitoring of drying if fruits and vegetables using computer vision.

- Special windows with good refractance properties for drying of powders or flakes.

- Electric heating or hybrid heating to avoid loss of certain properties of the food

2) Storage
- Sensor based cold storage where the temperature is adjusted automatically according to the requirement

- Virtual and automated monitoring of storage compartments.

- Detection of toxic components or volatile components by bio sensors and VOC sensors respectively.

3) Shelf Life Extension
- Irradiation sterilizes the food which can be done by electron beams, x rays, gamma rays etc.

- Using anti-microbial agents like silver nano particles

- Preserving seasonal fruits like strawberry, cherries by cold treatment usually cold plasma.

CONCLUSION

Smart and intelligent agriculture can transform traditional agricultural practices into modern technical solutions to save soil, water, seeds, fertilizers, chemicals, time, labor, energy, etc. and can also reduce postharvest losses. In addition, it can help the environment by sustainably using agricultural inputs and energy. Reduction in farm wastage, increased production, yield, best quality of agricultural products and farm losses. They save water by providing sufficient quantity of water to the soil and soil by furnishing the right volume of fertilizer and pesticides which does not harm the soil, improves quality and fertility of soil along with crop and human health. In short, the inclusion of advanced or innovative technologies such as sensors, artificial intelligence, robotics, machine learning, etc. in the current farm mechanization scenario will improve the overall productivity of agriculture by reducing human labor, enhancing Productivity and profit in ways which has least damage on society.

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INVESTMENT ANALYSIS FUNDAMENTAL COMPANY ANALYSIS

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ABSTRACT

The research paper offers a detailed overview of three prominent companies: Adani Enterprises Limited, TVS Motor Company, and Persistent Systems Limited. Adani Enterprises showcases remarkable growth in diverse sectors, emphasizing energy, infrastructure, and green initiatives. TVS Motor Company, a leading motorcycle manufacturer, exhibits resilience, innovation, and commitment to sustainability. Persistent Systems, a global IT services firm, stands out for its consistent financial growth and strategic investments. Investors may find potential opportunities in TVS Motor's short-term prospects, Adani's diversified business model, and Persistent Systems' long-term growth potential in the IT sector. Thorough research and consideration of market conditions are essential for informed investment decisions. Fundamental analysis for these companies would entail a comprehensive examination of their financials, management, industry dynamics, and market conditions to make informed investment decisions.

Adani Enterprises Limited

Adani Enterprises Limited, a vital component of the expansive Adani Group, established itself in 1988 and has since become a key player in diverse sectors such as energy, infrastructure, resources, logistics, and agribusiness. The company's operations are characterized by a comprehensive approach, covering the entire value chain, from sourcing and trading to power generation, transportation, and infrastructure development. With a diversified business model encompassing trading, power generation, coal mining, and infrastructure development, Adani Enterprises effectively leverages synergies and manages risks across multiple industries.

In the energy sector, the company actively engages in power generation, renewable energy projects, and the exploration of natural resources like coal and gas. The strategic involvement in infrastructure aligns with the broader vision of contributing to economic growth and connectivity. Having successfully built and listed notable unicorns such as Adani Transmission, Adani Power, Adani Ports & SEZ, Adani Green Energy, Adani Total Gas, and Adani Wilmar, the company has significantly contributed to India's self-reliance.

Adani Enterprises has directed investments toward emerging sectors like green hydrogen, establishing an end-to-end supply chain for new energy, materials such as copper and PVC, airport management, roads, data centers, solar manufacturing, defense & aerospace, edible oils and foods, mining, integrated resource solutions, integrated agri-supply chain, and water infrastructure. Notably, an investment of Rs. 150 in Adani Enterprises during its first IPO in 1994 had grown to over Rs. 900,000 by the close of FY 21-22, illustrating the company's remarkable growth trajectory. This success is attributed to a strategic combination of investments, operational efficiency, and a forward-looking approach that propels Adani Enterprises into a prominent position in the business landscape.

Adani New Industries Ltd (ANIL):ANIL was incorporated as a strategic vehicle to incubate and develop a comprehensive platform for the production of green energy. Positioned as a holding company for the new energy segment, ANIL aims to contribute to India's self-sufficiency in green energy, aligning with the National Green Hydrogen Mission (NGHM).

- Green Energy Production:

- ANIL focuses on an end-to-end supply and value chain for green energy production.

- Aiming to address India's energy security needs, ANIL capitalizes on the government's initiatives, particularly the NGHM.

- Solar Photovoltaic Manufacturing:

- Through Mundra Solar PV Ltd, ANIL has established India's largest vertically integrated Solar Photovoltaic Manufacturing and Engineering Procurement and Construction (EPC) business in the Mundra Special Economic Zone (SEZ).

- The solar manufacturing capacity is set to ramp up from 1.5 GW to 3.5 GW, making it a significant player in the rooftop and distributed solar EPC sector.

- Data Centers:

- ANIL entered into a joint venture with EdgeConnex to form AdaniConnex, focusing on the construction of data centres across India to meet the growing demands of the internet economy.

- Water Management:

- The company addresses water challenges in India through investments in waste water treatment, recycling, and reuse projects under the National Mission for Clean Ganga Framework.

- Exploring opportunities in the desalination space to tackle water scarcity issues.

- Adani Airports:

- Adani Airports, with a portfolio of eight airports, handles a substantial share of passenger traffic in India.

- Emphasises serving both aero and non-aero consumers through a hub-and-spoke strategy, aiming to cater to over 200 million consumers through airport infrastructure.

Performance: Aggregate sales increased following recovery from the pandemic in FY 21- 22, coupled with higher commodity realisations

Performance: Over the years, the Company sustained operating performance growth measured in EBITDA terms. In FY 21-22, there was strong growth from established and developing businesses

Performance: As the Company incubated new businesses of Airports, Roads and Others, its profit declined in FY 21-22 due to higher finance costs and depreciation in infra-heavy

Performance: The Company's net worth increased every single year during the last few years, indicating a stronger financial foundation

Performance: As the 21-22 Company invested deeper in new businesses like Airports, Roads and Others and incurred higher finance costs, its interest cover moderated to 1.9 in FY

Trends in Sales and Profit after Tax

Details	2023	2022	2021	2020	2019
Sales	67,309.48	26,817.60	13,339.58	16,189.49	15,334.62
Profit before Tax	2,213.74	1,113.25	555.26	969.55	627.20
Profit after tax	1,622.73	720.70	368.81	698.89	484.91
Share Capital	114.00	109.98	109.98	109.98	109.98
Net worth	13,933.78	4,730.66	4,127.99	4,127.99	3,248.82

The financial data for Adani Enterprises Ltd over the years 2019 to 2023 reveals a substantial growth trajectory in key performance metrics. In 2019, the company's sales amounted to 15,334.62 crore INR, with subsequent years witnessing a consistent upward trend. By the year 2023, Adani Enterprises achieved an impressive sales figure of 67,309.48 crore INR, signifying a substantial increase in revenue over the five-year period. The profitability of the company also exhibited remarkable growth, as the profit before tax surged from 627.20 crore INR in 2019 to 2,213.74 crore INR in 2023. Similarly, the profit after tax experienced significant growth, reaching 1,622.73 crore INR in 2023 from 484.91 crore INR in 2019. The company's financial strength is reflected in the steady increase in net worth, soaring from 3,248.82 crore INR in 2019 to 13,933.78 crore INR in 2023. This data underscores Adani Enterprises Ltd's robust financial performance and strategic management over the past five years, positioning the company as a major player in the market.

Corporate Actions
For the year ending March 2023 Adani Enterprises has declared an equity dividend of 120.00% amounting to Rs 1.2 per share. At the current share price of Rs 3215.20 this results in a dividend yield of 0.04%. The company has a good dividend track report and has consistently declared dividends for the last 5 years.

Announcement Date	Ex-Date	Dividend Type	Dividend (%)	Dividend (Rs)	Remarks
04-05-2023	07-07-2023	Final	120	1.20	Rs.1.2000.per share(120%)Dividend
04-05-2022	14-07-2022	Final	100	1.00	Rs.1.0000.per share(100%)Final Dividend
05-05-2021	01-07-2021	Final	100	1.00	Rs.1.0000.per share(100%)Dividend
12-03-2020	23-03-2020	Interim	100	1.00	Rs.1.0000.per share(100%)Interim Dividend
29-05-2019	29-07-2019	Final	40	0.40	Rs.0.4000.per share(40%)Final Dividen

The last bonus that Adani Enterprises had announced was in 2009 in the ratio of 1:1. The share has been quoting ex-bonus from December 10, 2009.

Announcement Date	Bonus Ratio	Record Date	Ex-Bonus Date
30-10-2009	1:1	11-12-2009	10-12-2009
01-08-1999	1:1	29-11-1999	01-11-1999
04-09-1996	1:1	01-11-1996	07-10-1996

Adani Enterprises had last split the face value of its shares from Rs 10 to Rs 1 in 2004. The share has been quoting on an ex-split basis from July 28, 2004.

Announcement Date	Old FV	New FV	Ex-Split Date
05-05-2004	10	1	28-07-2004

The last rights shares that Adani Enterprises had issued was in 2009 in the ratio of 1:16 at a premium of Rs 474.00 per share. The share has been quoting ex-rights from March 23, 2010.

Announcement Date	Rights Ratio	Face Value	Premium	Record Date	Ex-Rights Date
30-10-2009	1:16	1	474	25-03-2010	23-03-2010

Ratio Analysis

Particulars	FY ended 31st March, 2022	FY ended 31st March, 2021	Changes between Current FY & Previous FY	Explanation
Debtor's turnover	8.68	4.11	111.53%	Due to significant increases in commodity prices, revenue from operations increased significantly against average trade receivables.
Inventory turnover	7.69	8.04	-4.29%	Not applicable
Interest coverage ratio	4.93	3.24	52.11%	Ratio shows improvement during the year mainly due to increase in EBITDA by 30%.
Current ratio	1.09	1.08	0.66%	Not Applicable
Debt equity ratio	0.81	0.70	14.54%	Not Applicable
Operating profit margin	4.87%	7.51%	-35.20%	EBITDA increased 30% during the year in absolute terms. Since revenues increased significantly due to higher commodity prices, it resulted into lower margins in percentage terms.
Net profit margin	2.64%	2.68%	-1.67%	Not applicable
Return on net worth	13.75%	8.93%	53.92%	Ratio shows improvement as there was an exceptional loss in the previous year on account of a reversal of interest claim on delayed payment from the customer for ₹133.41 Crore and write-off of the Palej Block for ₹79.44 Crore.

Company Name	Price	% Chg	MCap(Cr)	TTM PE	P/B	ROE(%)	1 Yr Perform(%)	Net Profit(Rs.)	Net Sales(Rs.)	Debt to Equity
Adani Enterpris	3,215.20	1.47	366,533.16	104.36	14.09	7.75	66.96	2,208	136,977	1.20
Sundram	1,128.60	-5.10	23,715.09	46.10	9.00	16.40	15.08	500	5,662	0.23
Redington	190.30	-0.91	14,877.17	12.37	2.83	20.10	4.99	1,439	79,376	0.45
MMTC Ltd	85.70	-4.99	12,855.00	73.88	10.71	110.74	157.74	1,072	3,528	0.14
MSTC	987.45	-10.53	6,951.65	30.23	10.63	30.76	234.39	244	720	0.18

Adani Enterprises stands out in the peer comparison, boasting a stock price of INR 3,215.20 with a modest 1.47% change. The market capitalization is an impressive INR 366,533.16 Crores, reflecting its substantial presence in the market. The trailing twelve months Price-to-Earnings (TTM PE) ratio is relatively high at 104.36, suggesting a higher valuation compared to its peers. However, the Price-to-Book (P/B) ratio is reasonable at 14.09, indicating a balanced valuation in terms of its book value. Adani Enterprises exhibits a healthy Return on Equity (ROE) of 7.75%, signifying efficient utilization of shareholders' funds. The one-year performance stands at a commendable 66.96%, outperforming its counterparts.

In contrast, other companies in the comparison, such as Sundram, Redington, MMTC Ltd, and MSTC, demonstrate varying degrees of performance. Sundram faces a 5.10% decline in stock price and has a lower market capitalization. Redington, with a lower stock price, shows a marginal decline but has a relatively low P/E ratio. MMTC Ltd and MSTC, on the other hand, exhibit lower stock prices, significant declines in percentage change, and lower market capitalizations. Their financial indicators like P/E, P/B ratios, and ROE differ, portraying diverse financial health.

Adani Enterprises also excels in terms of net profit and net sales, recording INR 2,208 Crores and INR 136,977 Crores, respectively. The debt-to-equity ratio is manageable at 1.20, reflecting a balanced approach to financial leverage. In contrast, Redington, MMTC Ltd, and MSTC have varying levels of net profit and net sales, with differing debt-to-equity ratios. Overall, Adani Enterprises emerges as a robust player in the peer group, showcasing strong financial performance and market presence.

TVS MOTORS

TVS Motor Company, based in Chennai, India, is a prominent multinational motorcycle manufacturer. Ranking third in India by revenue, it boasts an impressive annual sales figure of three million units and a production capacity exceeding four million vehicles. Additionally, it holds the title of being India's second-largest exporter of two-wheelers, shipping its products to more than 60 countries worldwide.TVS Motor Company, based in Chennai, India, is a prominent multinational motorcycle manufacturer. Ranking third in India by revenue, it boasts an impressive annual sales figure of three million units and a production capacity exceeding four million vehicles. Additionally, it holds the title of being India's second-largest exporter of two-wheelers, shipping its products to more than 60 countries worldwide.TVS Motor Company, based in Chennai, India, is a prominent multinational motorcycle manufacturer. Ranking third in India by revenue, it boasts an impressive annual sales figure of three million units and a production capacity exceeding four million vehicles. Additionally, it holds the title of being India's second-largest exporter of two-wheelers, shipping its products to more than 60 countries worldwide.

TVS Motors boasts a diverse lineup of products, catering to both two-wheeler and three-wheeler markets with a variety of motorcycles, scooters, and electric vehicles, ensuring options for a wide range of customer preferences.

With a firm footing in India, TVS Motors stands out as a prominent player in the two-wheeler manufacturing sector, thanks to its extensive distribution and dealer networks, facilitating widespread access to its offerings throughout the country.

TVS Motors places a strong emphasis on innovation and technological advancements in its product development endeavors, constantly introducing new features and technologies such as electric vehicles and smart connectivity features to stay competitive.

Over the years, TVS Motors has cultivated a robust brand reputation, renowned for delivering high-quality products that resonate with customers due to their reliability, performance, and fuel efficiency, fostering a loyal customer base.

The company dedicates substantial resources to research and development, continuously striving to enhance its products and explore emerging technologies, ensuring it remains at the forefront of market trends and innovation.

Committed to sustainability, TVS Motors actively promotes electric mobility through its range of electric scooters, aligning with the growing consumer demand for cleaner transportation options and adhering to evolving regulatory standards in the automotive sector.

TRENDS IN SALES AND PROFIT AFTER TAX

DETAILS	2018-19	2019-20	2020-21	2021-22	2022-23
SALES	18,217	16,455	16,784	20,810	26,479
PROFIT BEFORE TAX	961	787	826	1,243	2,003
PROFIT AFTER TAX	670	592	612	894	1,491
SHARE CAPITAL	47.51	47.51	47.51	47.51	47.51
NET WORTH	3,348	3,619	4,171	4,822	6,048

From the above table, we can observe that sales in the year 2018-19 were 18,217 which decreased to 16,455 in the year 2019-20 then it kept on increasing for the upcoming years.

The profit before tax of the company for the year 2018-19 was 961 then for the following year 2019-20 it reduced to 787 and after that, there was an increase for the following years.

The profit after tax of the company in the year 2018-19 was 670, it decreased to 592 and went on to increase for the following years. If we compare profit before tax and profit after tax, we can observe that profit before tax was higher than profit after tax except for the years 2020-21, 2021-22 and 2022-23.

The share capital of the company has remained the same over the years and the net worth of the company has increased prominently over the past 5 years.

Total Revenue (in Crore) (INR)
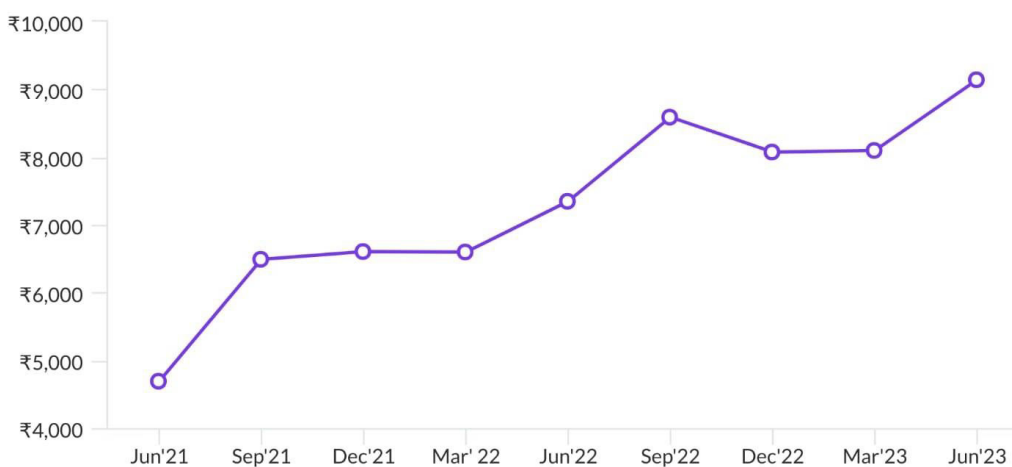
The above graph represents the total revenue earned by the company in the past 3 years. There has been a constant increase in the revenue and at times an unchanged revenue, however, the company has had an increase in revenue and profits due to an increase in sales.

CORPORATE ACTION TAKEN BY THE COMPANY IN THE LAST 5 YEARS\
A corporate action refers to any significant event that causes a notable change within an organization and affects its various stakeholders. Typically, such events require approval from the company's board of directors.

PURPOSE	VALUE	EX-DATE	DATE
Interim dividend - rs 5 per share	1	2 feb 2023	2 feb 2023
Interim dividend - rs 3.75 per share	1	25 march 2022	28 march 2022
Interim dividend - rs 1.40 per share	1	30 march 2021	2 april 2021
Interim dividend -rs 2.10 per share	1	4 feb 2021	5 feb 2021
Interim dividend - rs 1.40 per share	1	11 feb 2020	12 feb 2020

Close price will be updated after 18.15 hrs on account of joint press release dated February 09, 2018 (joint press release)

On Ex-Date, the % change is calculated with respect to Adjusted price (adjustment with respect to Corporate Actions such as Dividend, Bonus, Rights & Face Value Split)

52 week high & 52 week low prices are adjusted for Bonus, Split & Rights Corporate actions.The upper and lower price bands, for scrips on which derivative products are available or scrips included in indices on which derivative products are available, are on the basis of dynamic price band of 10%. In the event of a market trend in either direction, the dynamic price bands may be relaxed during the day in coordination with other Exchange.For securities that undergo call auction in special pre-open session - % change is calculated with respect to equilibrium price determined in the session.

(in case of New/IPO Listings; Re-Listing; Corporate Action; Surveillance action.)

Sectoral Index and P/E are for reference and does not necessarily imply that the security is a constituent of the Index.

RATIO ANALYSIS
CURRENT RATIO:- current assets divided by current liabilities

3,667.50 divided by 6, 008.54= 0.61038

CASH RATIO:- cash and bank balance + marketable securities divided by current liabilities

234.35 divided by 6,008.54 = 0.03900

STOCK TO WORKING CAPITAL RATIO:- closing inventory divided by working capital multiplied by 100- 2,02,86,464

DEBT EQUITY RATIO:- debt divided by equity 3.93

DEBT SERVICE COVERAGE RATIO:- earning available for debt divided by debt installment

INVENTORY VELOCITY:- 1 divided by inventory turnover ratio multiplied by 365 days

1 divided by 2.46 multiplied by 365 days = 148.37

EARNING PER SHARE:- earnings available for equity shareholders divided by number of equity shares= 31.38.

TVS Motors' current ratio remained stable at 0.9x in FY23 compared to FY22, indicating its ability to cover short-term and long-term obligations. However, the interest coverage ratio improved to 2.4x in FY23 from 2.1x in FY22, showing the company's enhanced capability to handle its interest expenses relative to its outstanding debt.The company's ability to cover its short-term and long-term obligations weakened slightly, with its current ratio dropping to 0.9x in FY23 from 0.9x in FY22. However, its capacity to cover interest expenses improved, with the interest coverage ratio rising to 2.4x in FY23 from 2.1x in FY22. This ratio indicates how comfortably the company can manage its interest payments on its debt, with a higher ratio being more favorable.

PEER COMPARISON

POINTS	TVS MOTORS	HERO HONDA MOTORS	ROYAL ENFIELD
PROFIT	37%	29.5%	54.7%
EPS (DILUTED)	8.13	50.25	95.74
DEBT	22,375.58	567.54	288.41,107.71
CUSTOMER RATINGS	3.5	4.3	4.5

Royal enfield has higher profits compared to tvs motors and hero honda, tvs motors has marginally high profits then hero honda.

The earning per share (diluted) of royal Enfield is more followed by hero honda

Tvs motors is in higher debt compared to the other two.

Royal enfield has proved to win customers heart and mind . it has the highest rating of 4.5, followed by hero honda and then tvs motors. In February 2023, TVS Motors experienced a 28% increase in the sales of its two-wheelers within the domestic market compared to the same period last year. Meanwhile, Royal Enfield observed a growth of 23.6% in motorcycle sales domestically, and Hero MotoCorp recorded a 15.3% rise in sales of motorcycles and scooters within the country.

Persistent System Ltd.

Persistent Systems Limited is an Indian multinational information technology services and solutions company headquartered in Pune, Maharashtra, India. Established in 1990, the company has grown to become a prominent player in the global IT industry. Persistent Systems focuses on providing innovative software solutions, digital transformation services, and technology consulting to a diverse range of clients across various industries.

The company specializes in software product development, offering end-to-end solutions that encompass the entire product lifecycle. Persistent Systems has a strong reputation for leveraging cutting-edge technologies such as cloud computing, artificial intelligence, machine learning, and data analytics to help businesses adapt to the rapidly evolving digital landscape.

Persistent Systems caters to a wide array of sectors, including healthcare, financial services, telecommunications, and manufacturing. With a global presence and a client base that spans North America, Europe, and the Asia-Pacific region, Persistent Systems has demonstrated its commitment to delivering high-quality and innovative solutions to address the complex challenges faced by businesses in the modern era.

Known for its emphasis on research and development, Persistent Systems actively collaborates with clients to understand their unique needs and provides customized solutions to drive digital innovation. The company's dedication to staying at the forefront of technology trends has positioned it as a trusted partner for organizations seeking to enhance their competitiveness in a rapidly changing business environment.

Trends in Sales and Profit after tax

Details	2023	2022	2021	2020	2019
Sales	83,505.92	57,107.46	41,878.88	33,659.41	33,659.41
Profit before tax	15,897.42	11,021.26	7,907.87	6,246.36	6,438.95
Profit after tax	9,210.93	6,903.86	4,506.77	3,402.89	3,516.79
Share capital	76.43	76.43	76.43	76.43	79.12
Net worth	39,588.11	33,624.40	27,899.35	23,799.84	23,394.09

Persistent Systems Ltd has shown a consistent and impressive upward trend in key financial metrics over the past five years, reflecting its sustained growth and financial stability. In terms of sales, the company has witnessed remarkable expansion, reaching INR 83,505.92 Crores in 2023 from INR 33,659.41 Crores in 2019, indicating a substantial increase in revenue.

The trend in profit before tax also demonstrates a positive trajectory, escalating from INR 6,438.95 Crores in 2019 to INR 15,897.42 Crores in 2023. This consistent growth in pre-tax profits underscores the company's operational efficiency and effective management of costs.

Persistent Systems' profitability, as measured by profit after tax, has similarly seen notable improvement over the years. The net profit has increased from INR 3,516.79 Crores in 2019 to INR 9,210.93 Crores in 2023, showcasing the company's ability to generate value for its shareholders.

Furthermore, the company's share capital remains steady across the mentioned years, while net worth has exhibited a continuous upward trend. The net worth has surged from INR 23,394.09 Crores in 2019 to INR 39,588.11 Crores in 2023, indicating robust financial health and a strengthening balance sheet.

In summary, Persistent Systems Ltd has demonstrated consistent growth in sales, profit before tax, profit after tax, and net worth over the past five years. These positive financial trends reflect the company's strategic management and its ability to capitalize on opportunities in the dynamic IT industry.

CORPORATE ACTION BY PERSISTENT SYSTEM

PURPOSE	RS.	EX-DATE
Interim dividend	32	30 jan 2024
Final dividend	12	11 jul 2023
Special dividend	10	11 jul 2023
Dividend declared	11	11 jul 2022
Dividend declared	6	13 jul 2021
Bonus history	Issue 1:1	10 march 2015

Persistent Systems Ltd has undertaken several significant corporate actions in recent years to enhance shareholder value and strengthen its financial position. On 30th January 2024, the company declared an interim dividend of Rs. 32 per share, demonstrating a commitment to distributing profits to its shareholders. This move follows a pattern of consistent dividend declarations, with a final dividend of Rs. 12 per share and a special dividend of Rs. 10 per share declared on 11th July 2023. Additionally, a dividend of Rs. 11 per share was announced on 11th July 2022, and Rs. 6 per share on 13th July 2021.

Moreover, Persistent Systems has a history of rewarding its shareholders through bonus issues. On 10th March 2015, the company issued a bonus in the ratio of 1:1, indicating a proactive approach to share capital restructuring and a desire to share its success with investors. These bonus issues are strategic moves to improve shareholder confidence and attract potential investors.

These corporate actions, including dividends and bonus issues, reflect Persistent Systems' commitment to aligning shareholder interests with the company's success. By consistently returning value to shareholders and strategically managing its capital structure, Persistent Systems has demonstrated prudent financial stewardship and a proactive approach to corporate governance.

RATIO ANALYSIS

CURRENT RATIO:- current asset divided by current liability

2,485.58 divided by 809.03= 3.0722=64.47

CASH RATIO:- cash and bank balance + marketable securities divided by current liabilities - 540.98 divided by 0.19=2,847.26

STOCK TO WORKING CAPITAL RATIO:- closing inventory divided by working capital multiplied by 100 - 0 divided by 1,676.55= 0

DEBT TO EQUITY RATIO:- debt divided by equity=0.125

DSCR:- earnings available for debt divided by debt installment =

INVENTORY VELOCITY:- 1 divided by inventory turnover ratio multiplied by 365 days =0.00

EPS:- earning available for equity shareholders divided by no. of equity shares - 103.52

Persistent Systems' financial analysis indicates a decrease in operating profit margins, dropping to 17.7% in FY23 from 16.6% in FY22. Similarly, net profit margins decreased from 12.1% in FY22 to 11.0% in FY23. However, the debt to equity ratio remained stable at 0.1 for FY23 compared to FY22.In FY23, the company's current ratio decreased to 1.8x from 2.0x in FY22, indicating a slight decline in its ability to cover short-term and long-term obligations. Similarly, the interest coverage ratio fell to 27.2x from 79.1x, suggesting a decrease in the company's ability to comfortably meet its interest payments on outstanding debt.

PEER COMPARISON

POINTS	PERSISTENT SYSTEMS	WIPRO	INFOSYS
SALES	5,117.55	67,753.40	146,767
EPS (BASIC)	103.52	16.75	55.48
DEBT	655.36	17,466.0	8,299.0

From the above table we can figure out that sales of infosys are more than persistent systems and wipro.

The basic EPS of persistent system is more, followed by infosys and then wipro The debt of wipro is higher than the other two companies.Wipro has 45,461 more total submitted salaries than Persistent Systems.Persistent Systems scored higher in 10 areas: Overall Rating, Culture and Values, Diversity and Inclusion, Work-life

balance, Senior Management, Compensation & Benefits, Career Opportunities, CEO Approval, Recommend to a friend and Positive Business Outlook.Wipro has 3,093 more recently posted open jobs than Persistent Systems The promoters of Infosys hold a 14.8% stake in the company. In case of PERSISTENT SYSTEMS the stake stands at 31.1%.

AN INVESTOR'S POINT OF VIEW

Past 10 years financial track record analysis indicates that TVS motor company ltd is a good quality company. The price of TVS motors company ltd is likely to rise for short term. Shares have risen close to 50% in 2023. As an investor, if i want to make a short investment in order to make quick profits , i would invest in TVS motors.

Adani enterprises is one of the most valuable enterprises in India. Their shares are popular among investors. If i invest in Adani it will help me with capital appreciation.

Persistent system is forecast to grow earnings by 23.3% and revenue by 14.7% per annum. It's EPS is expected to grow by 21.8% pa. Return on equity is to be around 25% in 3 years. Similar to TVS motors, this company too is on the rise so investing would certainly give profit to the investors.

From an investor's perspective, each company presents unique opportunities. TVS Motor Company's recent rise in shares and consistent growth make it a potential short-term investment. Adani Enterprises' diversified business model, continuous growth, and strategic investments position it for capital appreciation. Persistent Systems, with forecasted earnings and revenue growth, presents an attractive opportunity for investors looking for long-term prospects in the IT sector.

It's crucial for investors to conduct further research, consider market conditions, and align their investment strategies with their financial goals before making investment decisions.

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SYNCODE: A REAL TIME WEB-BASED CODE EDITOR

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ABSTRACT

This research paper presents SynCode, a cutting-edge solution in the field of collaborative software development, offering a real-time web-based code editor designed to transform the dynamics of coding teamwork. In an era where remote collaboration is increasingly prevalent, the demand for synchronized and efficient coding tools has grown exponentially. This research delves into the architecture, functionalities, and impact of SynCode, shedding light on its role in fostering seamless collaboration among developers. The platform introduces a new paradigm in collaborative coding, providing an environment where multiple users can edit and contribute to a shared codebase simultaneously. Through an intuitive and user-friendly interface, SynCode ensures accessibility for developers of varying expertise, thereby promoting inclusivity in collaborative projects.

Key features of SynCode include real-time code synchronization, multi-language support with robust syntax highlighting, and integration with version control systems like Git. The platform's live preview and debugging tools enable developers to collaboratively visualize and troubleshoot code changes, enhancing the overall efficiency of the development process. SynCode's security and access control mechanisms ensure that collaborative efforts are secure and protected. The study looks into the impact of SynCode on development workflows, examining how it shortens project timelines, improves team communication, and ultimately contributes to the evolution of modern software engineering practices.

In conclusion, SynCode emerges as a transformative force in the collaborative coding landscape, presenting a comprehensive solution for developers seeking a dynamic, secure, and real-time web-based code editing experience. This research contributes valuable insights into the potential of SynCode to reshape collaborative development practices and sets the stage for further advancements in the field.

Keywords: Real-Time Collaboration, Code Synchronization, Enhanced Code Editing.

INTRODUCTION
Software development requires effective collaboration among programmers with diverse skills and experiences. For supporting collaboration in the programming process, there are two general categories of approaches and techniques, namely non-real-time collaborative programming and real-time collaborative programming. Non-real-time collaborative programming is a traditional approach that has been widely adopted and practiced in the communities for a long time, which is commonly supported by version control systems such as Git. It is considered to be a kind of non-real-time collaboration because each programmer's modification on the source code copy will be kept private until the updated source code is uploaded to the repository and merged into other programmers' local source code copies. In contrast, real-time collaborative programming is an emerging approach that supports a team of programmers to view and edit a set of shared source code documents at the same time. During a real-time collaboration session, each programmer can edit any part of the source code, and changes become instantly visible at other collaborating sites. Unlike non-real-time collaborative programming, concurrent changes made by several programmers can be automatically integrated in real-time collaboration processes without manual conflict resolution.

SynCode is an innovative real-time web-based code editor which is a code collaboration platform designed to streamline and enhance the way developers work together on coding projects. This editor is designed to facilitate group development, pair programming, code reviews, and collaborative coding sessions.

LITERATURE REVIEW
The literature on real-time web-based code editors highlights their potential for enhancing collaboration and accessibility in programming. Goldman (2011) and Kurniawan (2015) both emphasize the benefits of real-time collaboration, with Goldman's Collabode focusing on error-mediated integration and Kurniawan's CodeR providing a workspace for real-time collaboration and code execution. Lautamäki (2012) extends this concept to a complete Java editor with error checking and code generation capabilities, while Thesis (2022) takes a unique approach by developing a voice-driven code editor for accessibility. These studies collectively underscore the value of real-time web-based code editors in improving collaboration and accessibility in programming.

MAIN FEATURES OF THE SYSTEM

Real-Time Collaboration: SynCode allows multiple users to edit and view code simultaneously in real-time.

Benefit: This feature promotes efficient collaboration among developers, enabling them to work on the same codebase concurrently.

Synchronized Code Editing: Changes made by one user are instantly synchronized and reflected in real-time across all connected users.

Benefit: Developers can see live updates, reducing the need for manual refreshes and ensuring that everyone is working on the latest version of the code.

User-Friendly Interface: SynCode is designed with an intuitive and user-friendly interface, providing a cohesive environment for developers to work collaboratively.

Benefit: The interface enhances the overall user experience, making it easier for developers to navigate, edit code, and communicate within the platform.

Support for Multiple Programming Languages: SynCode is versatile and supports a wide range of programming languages.

Benefit: Developers can work on projects using their preferred programming language, making SynCode suitable for diverse development teams with varying language preferences.

Robust Synchronization Mechanism: SynCode employs a robust synchronization mechanism to handle concurrent edits by multiple users.

Benefit: The synchronization mechanism ensures that changes are managed efficiently, minimizing conflicts and maintaining code consistency during collaborative editing.

Security Measures: SynCode incorporates security measures such as user authentication and authorization to ensure secure access to the platform.

Benefit: Security measures protect sensitive data, prevent unauthorized access, and maintain the integrity of code repositories.

APPLICATION WORKFLOW

An application of SynCode could be in facilitating remote coding interviews, hackathons and coding competitions, remote pair programming, code reviews, open-source contributions, and many more.

The SynCode application procedure is depicted as a flow chart in figure 1. SynCode is an online tool that allows individuals all over the world to collaborate on programming in real time. Based on the MERN stack, it gives programmers the ability to collaborate in real-time on the same code, giving teams a platform to increase productivity and successfully complete challenging projects.

Figure 1: Workflow of SynCode
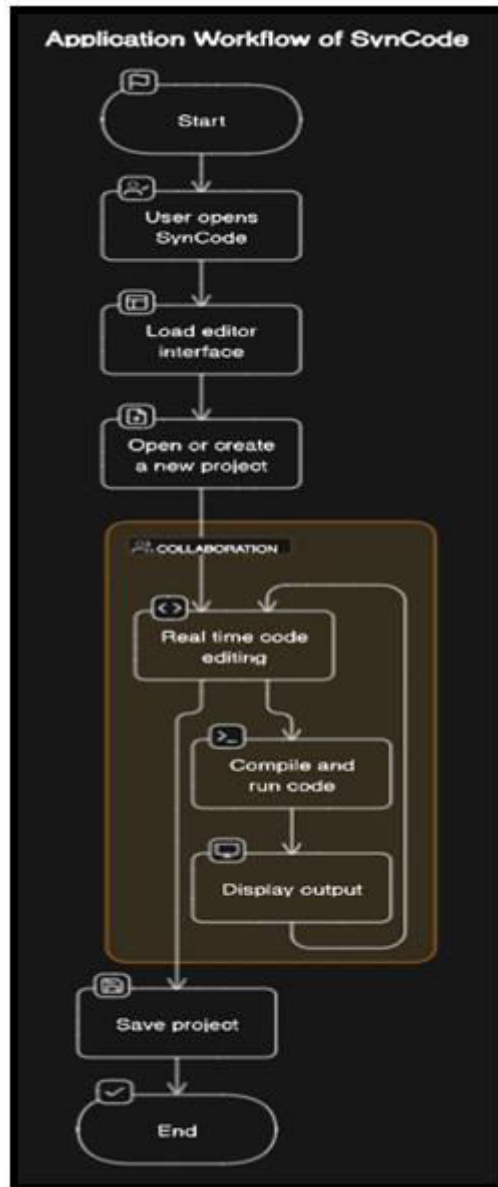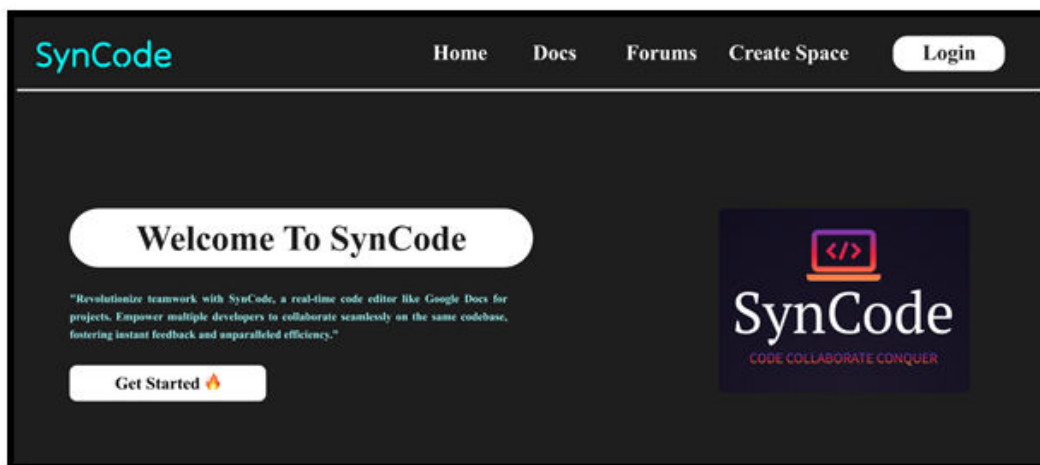

Figure 2: Home Page of the Website

CONCLUSION
Software development requires effective collaboration among programmers with diverse skills and experience. In contrast to the conventional non-real-time collaborative programming which is supported by version control systems, real-time collaborative programming is an emerging approach that enables a team of programmers to

view and edit shared source code documents at the same time. During a real-time collaboration session, each programmer's changes on the source code are instantly visible and integrated at other collaborating sites. Because of its wide range of application scenarios and benefits, this emerging technique has attracted increasing interests from both academia and industry. Lightweight integrated development environments (lightweight IDEs), such as Visual Studio Code and Sublime Text, have rapidly grown in popularity in the recent years due to their excellent customizability and extensibility. However, there are serious problems and limitations with existing real-time collaboration support for lightweight IDEs.

Motivated by the above observations, we have proposed, designed and implemented a real-time collaborative programming environment named SynCode. In SynCode, changes can be shared immediately, without the manual overhead of version control, and each programmer can navigate the code independently, without the need to share a single view. One benefit of implementing SynCode as a web application is that new programmers can join a project and immediately start working together simply by visiting the same URL.

There is no need to check out code or set up a local development environment. It is a web-based collaborative integrated development environment designed for experimenting with how programmers can write code in close collaboration with one another. So, SynCode is tailored for collaborative coding, pair programming, and real-time code reviews. Ideal for remote teams, teaching environments, and scenarios where real-time collaboration is a primary requirement. Collaborative programming has a bright future ahead of it, and SynCode is a great illustration of what contemporary web technology can accomplish.

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MENTAL HEALTH INTERVENTION FOR SCHOOL CHILDREN: AN EMPIRICAL STUDY MADE OVER THE SCHOOL CHILDREN OF NAVI MUMBAI.

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ABSTRACT

The purpose of this study is to emphasize the critical role of schools, educators and parents in promoting positive mental health outcomes for students. The growing acceptance of mental health as an integral component of overall well-being has increased focus on its intervention in education. Effective interventions help students feel happier, more engaged, and better equipped to meet the challenges of school and beyond. To gather information, primary and secondary data were used. In the methods of data collection, the instrument used is closed ended and open ended (only 1 question) questionnaire. The researcher tried to maintain Quantitative research. A sample strength of 200 respondents comprising of students, teachers and parents were considered for the research by the researchers. Sampling technique chosen for the research is simple random sampling method Some specific questions were raised regarding the mental health intervention for school students. The researcher aims to prove that schools implement mental health interventions to support student well-being, improve academic performance, create supportive environments, promote social-emotional skills and compliance to promote student well-being.

Keywords: Mental Health, School children, Mental Health Intervention, Mental well-being

INTRODUCTION

Mental health is a dynamic and fluctuating state, and it is crucial to prioritize and maintain mental health of school children. Children in schools today have less time for leisure and relaxation because of the hectic and complicated times we live in, which negatively impacts their mental health. Undiagnosed and untreated mental health issues in children and adolescents can have a serious negative influence on development and learning.

One in every five children has a diagnosable mental, emotional, or behavioural illness, but many do not receive the necessary treatment. Our studies and survey indicate a strong correlation between students' academic performance and their mental well-being.

Mental health intervention refers to various strategies, therapies, or actions taken to address and improve an individual's mental health. The goal is to support individuals in achieving better mental well-being and functioning. Mental health intervention in schools is critical because it provides early support, improves academic performance, reduces stigma, provides students with coping skills, and fosters a positive school culture, ultimately benefiting students' well-being and success in a safe and supportive environment. Mental Health Intervention at an early stage provides children and young people with the tools they need to handle challenges in their lives. Through a comprehensive analysis of current literature and empirical studies, this paper intends to provide insights into the efficacy, challenges, and potential future directions of mental health interventions tailored for school-aged children in Navi Mumbai.

LITERATURE REVIEW

Sr no.	Date of publica tion	Source	Author's name	Publisher's name	Topic	Review
1	2023	View of Perspective of Teachers on the Mental Health of Students: A Mental Health Literacy Survey (ijbscps.com)	Shilpa Aggarwal, Palasha Parikh	Indian Journal of Behavioural Sciences	Perspective of Teachers on the Mental Health of Students: A Mental Health Literacy Survey	Improving mental health literacy in teachers and structured programmes to improve mental health literacy can help teachers in supporting the mental health needs of students
2	2019	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6491840/	García-Carrión, R., Villarejo-Carballido, B., & Villardón-Gallego	National Library of Medicine	Children and Adolescents Mental Health: A Systematic Review of Interaction-	Factors that foster mental health as social support or engagement also increase with interventions programs that include interaction

					Based Interventions in Schools and communities	as a main feature.
3	2019	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8061244/	Werlen, L., Gjukaj, D., Mohler-Kuo, M., & Puhan	National Library of Medicine	Interventions to improve children's access to health care: a systematic review and meta-analysis	To have a population-level effect on improving children's access to mental health care, two-stage interventions that identify those in need and then engage them in the health-care system may be necessary.
4	2013	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3902042/	Green JG, McLaughlin KA, Alegría M, Costello EJ, Gruber MJ, Hoagwood K, Leaf PJ, Olin S, Sampson NA, Kessler RC, B.S., and Ronald C. Kessler, Ph.D.	National Library of Medicine	School Mental health resources and Adolescent Mental Health Service Use.	School mental health resources, particularly those related to early identification, may facilitate mental health service use and influence sector of service use for youths with DSM disorders.
5	2009	https://www.researchgate.net/publication/26889273_Promotion_and_prevention_in_child_mental_health	P. C. Shastri	Indian Journal of Psychiatry	Promotion and prevention in child mental health	Single window operation for child mental health, education and welfare will surely go a long way in successful implementation of various child legislations providing right control, quick results and ensuring justice for successful mental health programmes. Single window operation for child mental health, education and welfare will surely go a long way in successful implementation of various child legislations providing right control, quick results and ensuring justice for successful mental health programmes. Single window operation for child mental health, education and welfare will surely go a

						long way in successful implementation of various child legislations providing right control, quick results and ensuring justice for successful mental health programmes. Single window operation for child mental health, education and welfare will surely go a long way in successful implementation of various child legislations providing right control, quick results and ensuring justice for successful mental health programmes.

RESEARCH METHODOLOGY

Objectives

The main Objectives of the Study Are:

1. To investigate the correlation between mental health intervention and academic outcomes.

2. To conduct research to understand student's perception and experience regarding mental health intervention.

3. To investigate the attitudes and perspectives of educators, parents and school staff towards mental health intervention.

Data Source and Collection Procedure

Primary and secondary data have been used to collect information. Questionnaires were used to collect primary data. For the study, a well-structured questionnaire was created. There were some specific questions about mental health and well-being of school children.

Furthermore, secondary data was gathered for this study from existing literature, published books, articles, journals, newspapers, magazines, and the internet.

Method of Data Collection: Primary data collection by way of Questionnaire. There were 18 questions in the questionnaire, and the data was collected from school children, educators and parents in Navi Mumbai.

Sampling Method: Simple Random Sampling.

Sampling Strength: There were 200 people who responded comprising of students, teachers and parents were considered for the research by the researchers.

Data Processing: The researcher attempted to collect the data to infer the data from the representative research by using advanced Excel for the data processing purpose.

Sampling Design

Random Sampling Method

Sample Strength: 200 respondents are chosen for the current study.

Data Analysis: The researcher used processed data currently to infer the findings. The secondary data collected from articles, journals and literature on Internet, as well as the primary data collected via questionnaire, have been thoroughly analysed.

But the researchers aim to use statistical tools in future for significant testing of the hypothesis.
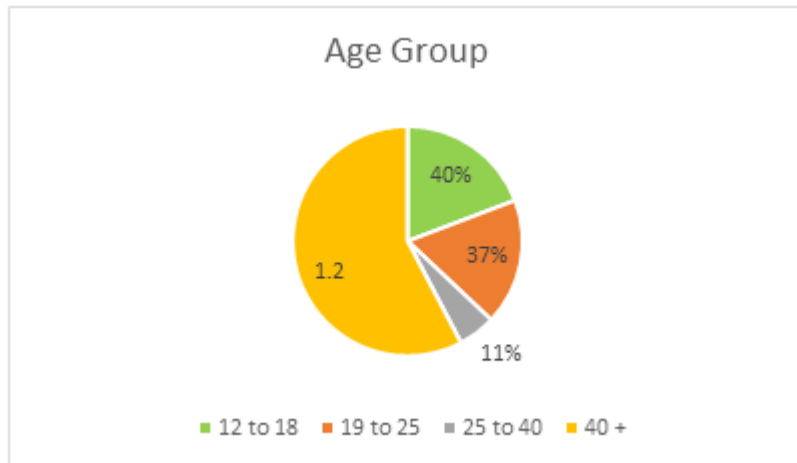
RESEARCH ANALYSIS:

Demographic Details:

Research Statement 1: The respondents were asked, which age group they belong to.

Table No. 1 below shows:

Age Group	Percentage
12-18	40%
19-25	37%
25-40	11%
40+	12%

Graph No. 1 below shows:

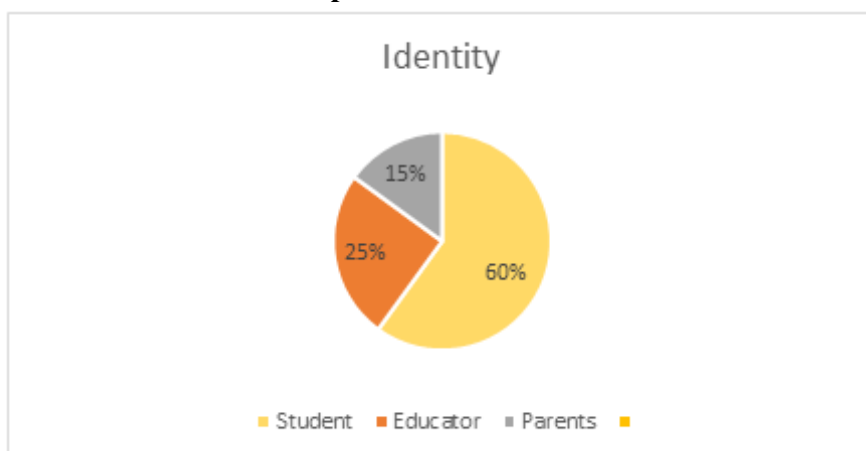
Research Interpretation

The first question asked was, which age group they belong to, of which 40% of respondents were of **12-18** age group, 37% of respondents were of **19-25** age group, 11% of respondents were of **25- 40** age group & 12% of respondents were of **40+** age group.

Research Statement 2: The respondents were asked whether they are a student, educator or parent.

Table No. 2 below shows:

Identity:	Percentage
Student	60%
Educators	25%
Parents	15%

Graph No. 2 below shows:
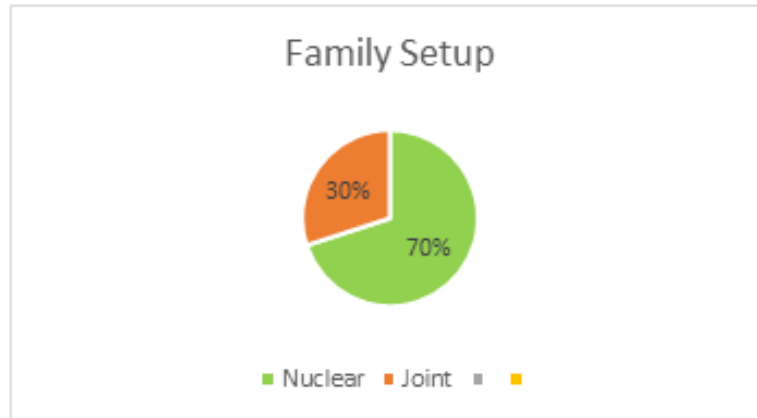

Research Interpretation

The second question asked was their identity of which, 60% of respondents were students, 25% of respondents were educators & 15% of respondents were parents.

Research Statement 3: The respondents were asked if they live in a nuclear family setup or joint family setup.

Table No. 3 below shows:

Family Setup:	Percentage
Nuclear	70%
Joint	30%

Graph No. 3 below shows:

Research Interpretation

The third question asked was, they live in a nuclear family setup or joint family setup of which, 70% of respondents live in nuclear family setup and 30% of respondents live in Joint family setup.

According to our survey, students in Navi Mumbai usually live in a nuclear family setup.

Research Statements Related to Given Objectives:

Research Statement 4: The respondents were asked about the employment status of the parents.

Table No. 4 below shows:

Employment Status:	Percentage
One parent working	47.5%
Both Working	52.5%

Graph No. 4 below shows:
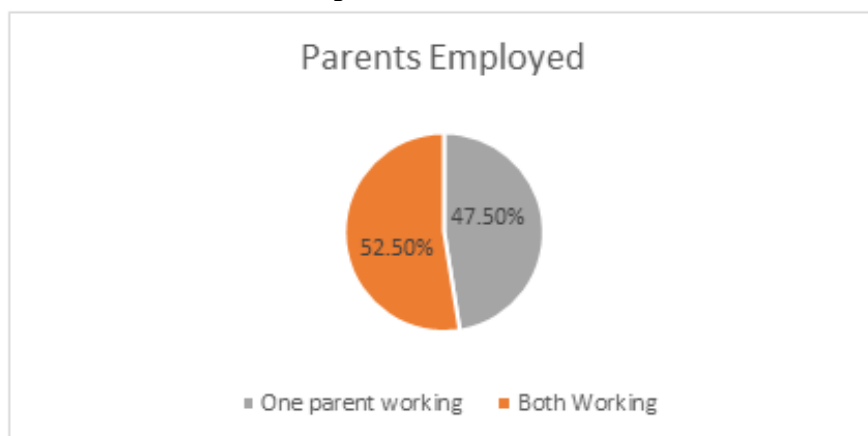
Research Interpretation

The fourth question asked employment status of the parents of which, 47.50% of responses were One parent employed and 52.50% of responses were Both the parents employed.

Research Statement 5: The respondents were asked if they attend any tuition/classes/coaching.

Table no. 5 below shows:

Tuitions:	Percentage
Yes	72%
No	39%

Graph No. 5 below shows:

Research Interpretation

The fifth question asked do the students attend tuition/classes/coaching of which, 39% responded 'yes' and 72% responded 'no'.

Research Statement 6: The respondents were asked about how often do school children feel stressed or anxious due to academic pressures.
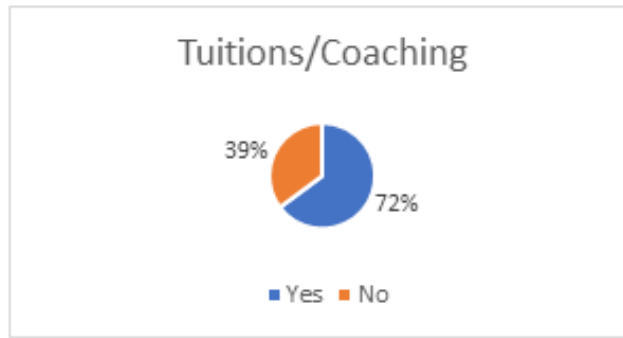
Stressed or Anxious	Percentage
Sometimes	60%
Often	31%
Rarely	9%

Graph No. 6 below shows:
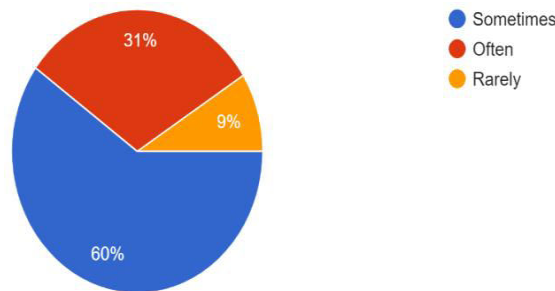
Research Interpretation

The sixth question asked was how often do school children feel stressed or anxious due to academic pressures of which, 60% responded 'sometimes', 31% responded 'often' and 9% responded 'rarely'.

Research Statement 7: The respondents were asked about the main sources of stress in their life.

Sources of stress	Percentage
Academic/ Workload	34%
Time Management	22%
Health & Well-Being	6%
Life Transitions	6%
Personal Expectations	32%

Graph No. 7 below shows:
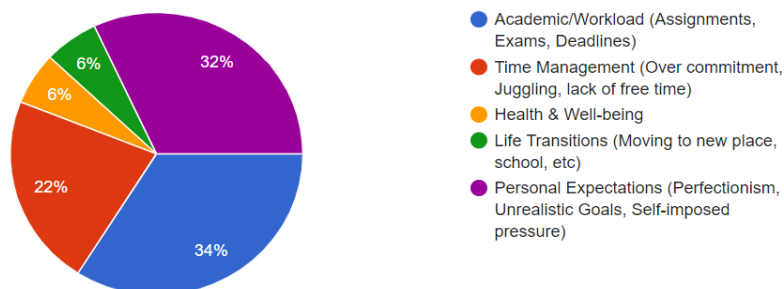
Research Interpretation:

The seventh question asked was the main sources of stress in their life of which, 34% of respondents reported stress due to Academic/ Workload, 22% of respondents reported stress due to Time Management, 6% of respondents reported stress due to Health and Well-being, 6% of respondents reported stress due to Life transitions and 32% of respondents reported stress due to Personal Expectations.

Research Statement 8: The respondents were asked about the percentage of their leisure and relaxation time involving non-screen related activities.

Table No: 8 below shows:

Non- screen leisure Time	Percentage
Less than 25%	52%
25 - 50%	22%
50 – 75%	18%
More than 75 %	10%

Graph No. 8 below shows:

Research Interpretation

The respondents were asked about the percentage of their leisure and relaxation time involving non-screen related activities of which, 52% of respondents spend less than 25% non-screen time, 22% of respondents spend 25 to 50% of non-screen time, 18% of respondents spend 25 to 75% of non-screen time and 10% of respondents spend more than 75% of non-screen time.

Research Statement 9: The respondents were asked whether they had ever experienced negative or offensive content on social media.

Table No. 9 below shows:

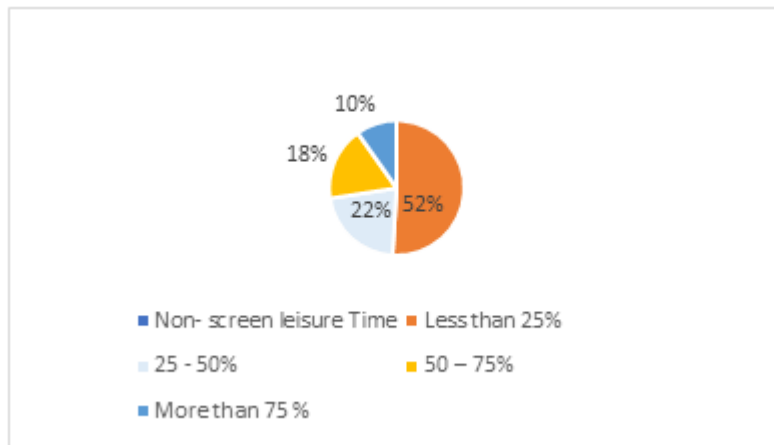| Experience	Percentage
Yes	50%
No	30%
Maybe	20%

Graph No. 9 below shows:
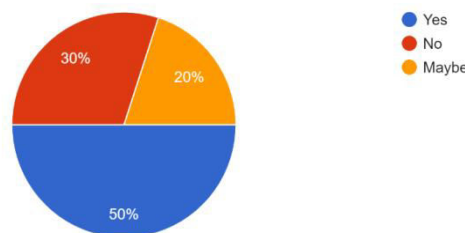
Research Interpretation

The respondents were asked whether they had ever experienced negative or offensive content on social media of which, 50% responded 'yes', 30% responded 'no' and 20% responded 'maybe'.

Research Statement 10: The respondents were asked about the number of hours of sleep they (students) usually get.

<div align="center">

Table No. 10 below shows:

Sleep Time	Percentage
Less than 4 hours	4%
Around 4 – 6 hours	30%
6 – 8 hours	56%
More than 8 hours	10%

</div>

<div align="center">

Graph No. 10 below shows:

</div>

Research Interpretation

The respondents were asked about the number of hours of sleep they (students) usually get of which, 4% of respondents' sleep time was less than 4 hours, 30% of respondents' sleep time was around 4-6 hours, 56% of respondents' sleep time was around 6-8 hours and 10% of respondents' sleep time was more than 8 hours.

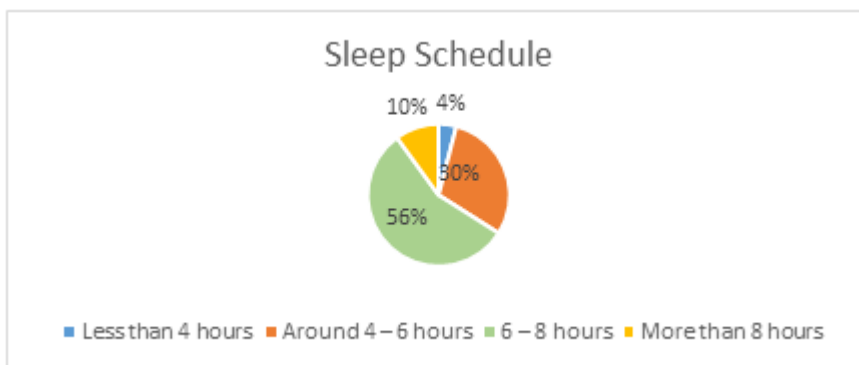**Research Statement 11:** The respondents were asked, how much time do they spend with their parents.

<div align="center">

Table No. 11 below shows:

Time with their parents	Percentage
Less than 15 min	20%
15 min – 1 hour	11.5%
1 – 2 hours	32%
More than 2 hours	36.5%

</div>

<div align="center">

Graph No. 11 below shows:

</div>
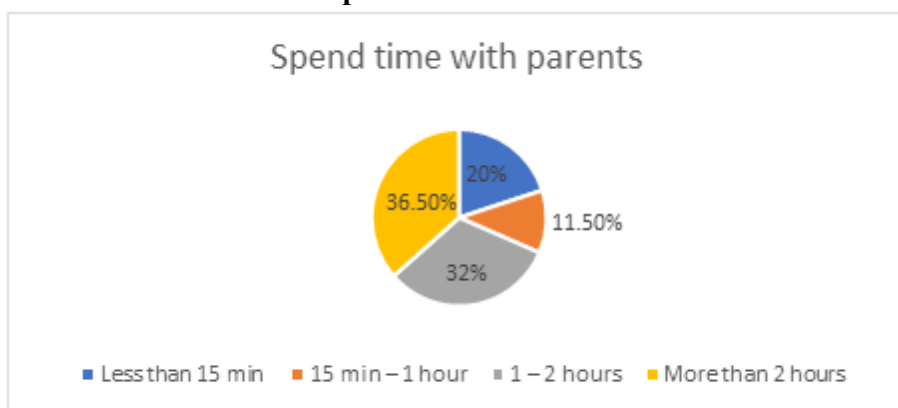
Research Interpretation

The eleventh question asked was how much time they spend with their parents of which, 20% reported spending less than 15 minutes, suggesting a relatively minimal amount of time, 11.5% reported spending around 15 min - 1 hour indicating a moderate but still limited interaction, 32% reported to spend around 1-2 hours, indicating a moderately significant amount of time and 36.5% reported spending more than 2 hours, suggesting a substantial amount of time spent with their parents.

Research Statement 12: The respondents were asked whether they (students) are aware of mental health resources (workshops, counselling, therapy) available at their school.

Table No. 12 below shows:

Awareness	Percentage
Yes	62%
No	27%
Maybe	11%

Graph No. 12 below shows:
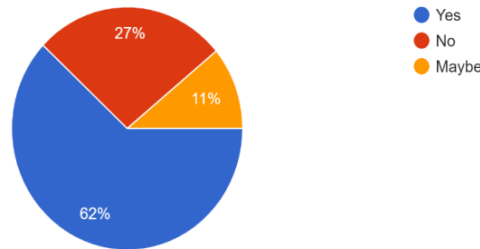
Research Interpretation

The twelfth question asked was whether they (students) are aware of mental health resources (workshops, counselling, therapy) available at their school of which, 62% of responses were 'yes', 27% of responses were 'no' and 11% of responses were 'maybe'.

Research Statement 13: The respondents were asked whether they had ever used these resources (mentioned in q.12).

Table No. 13 below shows:

Utilization	Percentage
Yes	61%
No	24%
Maybe	15%

Graph No. 13 below shows:
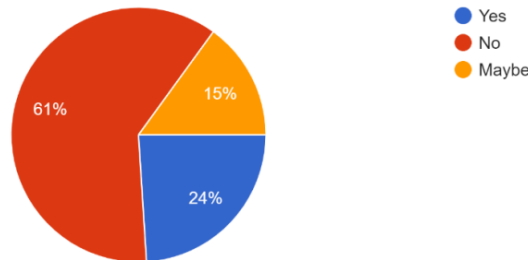
Research Interpretation

The thirteenth question asked was whether they had ever used these resources (mentioned in q.12). of which 61% of responses were 'yes', 24% of responses were 'no' and 15% of responses were 'maybe'.

Research Statement 14: The respondents were asked how comfortable they feel discussing about mental health with others.

Table No.14 below shows

Comfortability	Percentage
1	7%
2	8%
3	40%
4	33%
5	12%

Graph No. 14 below shows:
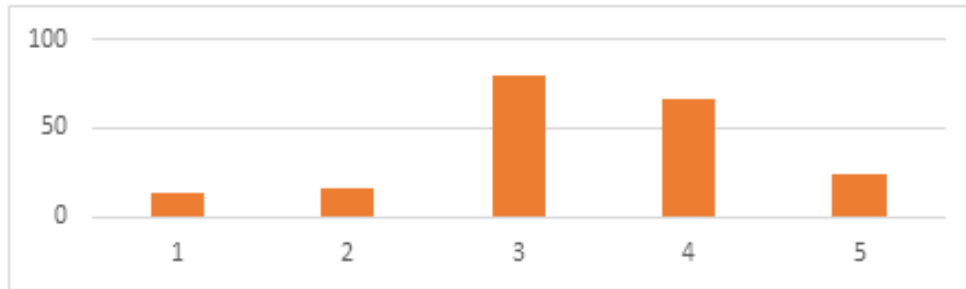
Research Interpretation

The **fourteenth question** asked was how comfortable they feel discussing about mental health with others of which 7% rated 1, 8% rated 2, 40% rated 3, 33% rated 4 and 12% rated 5.

Research Statement 15: The respondents were asked if they integrate mental health education into their teaching practices. (For educators) OR Whether they actively respond to mental health education. (For students)

Graph No. 15 below shows:
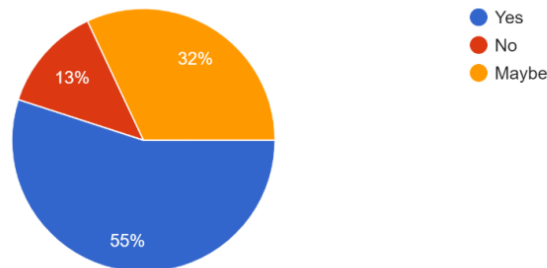
Research Interpretation

55% responded 'yes', 13% responded 'no' and 32% responded 'maybe'.

Research Statement 16: The respondents were inquired about their opinion on whether there should be increased emphasis on mental health education and awareness in schools.

Table No. 16 below shows:

Utilization	Percentage
Yes	89%
No	5%
Maybe	6%

Graph no. 16 below shows:
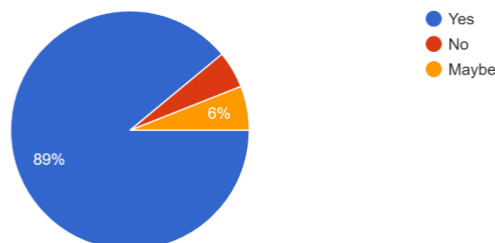
Research Interpretation

The **sixteenth question** inquired about their opinion on whether there should be increased emphasis on mental health education and awareness in schools of which, 89% of responses were 'yes', 5% of responses were 'no' and 6% of responses were 'maybe'.

Research Statement 17: The respondents were asked to rate their current mental well-being from 1 to 5.

Graph no. 17 below shows:
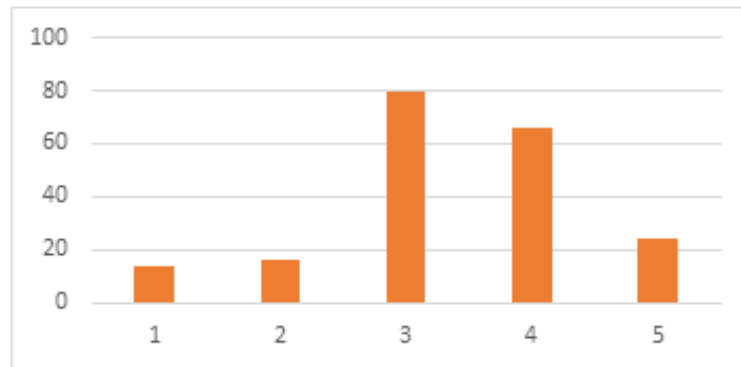
Research Interpretation

The **seventeenth question** asked was to rate their current mental well-being from 1 to 5 of which, 7% rated their mental well-being as 1, 8% rated their mental well-being as 2, 40% rated their mental well-being as 3, 33% rated their mental well-being as 4 and 12% rated their mental well-being as 5.

Research Statement 18: The research statement 18, sought their input on the improvements or additional support they believe would enhance mental health intervention for students.

RESEARCH INTERPRETATION

The responses to the eighteenth question emphasized on a holistic approach to support students' mental health in Navi Mumbai. Key points include the importance of professional counselling, a dedicated counselling room, yoga and meditation, quality time with friends and family, constructing community activities around mental health awareness and strategies like mindfulness and virtual support, also highlighting the significance of online support groups and the role of warm and welcoming counsellors. Overall, the focus on fostering a non-judgmental environment for students' well-being.

RESEARCH FINDINGS:

- According to the survey, the percentage of both the parents employed is more than one parent employed in the Navi Mumbai region. When both parents are employed, often a child is neglected. It can lead to less quality time together, increased loneliness, reduced supervision, which may potentially affect a child's mental health.

- According to our survey, school children in Navi Mumbai often go for tuitions or coaching for long hours after their school time which affects their concentration level, reduced leisure time, over exertion etc.

- There is a significant percentage of students who face high academic pressures from parents, teachers and society. There is a correlation between academic pressures and mental health issues with students reporting anxiety, peer pressure, burnout and stress, which also leads to low scores later.

- Majority of the respondents have various sources of stress with Academic stress being the highest of all, followed by Personal Expectations and Time Management and other reasons. The cumulative effect of these stressors affects a child's mental health.

- A significant majority, constituting 52% of those surveyed, spend less than 25% of their leisure time engaged in non-screen related pursuits. This suggests a prevalent inclination towards screen-based activities for relaxation and leisure among a substantial portion of the respondents. However, the data also showcases that a considerable percentage of individuals value non-screen activities to different extents. Approximately 22% of respondents allocate between 25% to 50% of their leisure time away from screens, indicating a moderate preference for non-screen pursuits. Moreover, a combined 28% of participants, with 18% spending 50% to 75% and 10% dedicating more than 75% of their leisure time to non-screen activities, demonstrate a substantial inclination towards off-screen relaxation endeavors. The research findings reveal a notable shift in leisure time patterns, with a strong inclination toward non-screen leisure time activities.

- Overall, the data highlights a considerable portion of students who might be experiencing insufficient sleep, with a significant number sleeping less than the recommended 7-9 hours per night. This pattern of varied sleep durations among students could have potential implications for their overall health, well-being, and academic performance.

- 20% reported spending less than 15 minutes, suggesting a relatively minimal amount of time, 11.5% reported spending around 15 min -1 hour indicating a moderate but still limited interaction, 32% reported to spend around 1-2 hours, indicating a moderately significant amount of time and 36.5% reported spending more than 2 hours, suggesting a substantial amount of time spent with their parents.

- The research data reveals insights into the awareness of mental health resources among students at their school. A significant majority, comprising 62% of respondents, indicated that they are aware of the available resources, which include workshops, counseling, and therapy. This suggests a substantial level of awareness among the student body regarding the mental health support services offered by their school. However, it's concerning that a notable 27% reported being unaware of these resources, potentially indicating a gap in communication or access to information about available support systems. Additionally, 11% of responses fell under the category of "MAYBE," suggesting some uncertainty or ambiguity regarding awareness, which could signify a need for clearer communication or better dissemination of information regarding mental health resources within the school community in Navi Mumbai.

- The research data on the utilization of mental health resources among students reveals several important aspects. A significant majority, accounting for 61% of respondents, reported having utilized the mental health resources available at their school.

- However, 24% indicated that they had not used these resources. This suggests that despite awareness (as indicated by the 62% in the previous question), a notable proportion of students have not accessed these services for various reasons, which could include personal preferences, stigma, or other barriers hindering their utilization. Moreover, 15% responded with "MAYBE," indicating uncertainty or potential hesitation in using these resources.

- This suggests a need for further exploration into the reasons behind this uncertainty and potential strategies to encourage more students to avail themselves of the mental health resources provided by their school. Understanding these barriers could aid in fostering a more supportive environment and encouraging greater utilization of available mental health services among the student population.

- The data indicates that a majority of both educators and students are actively involved in mental health education or response initiatives. However, about one-third (32%) from both groups expressed uncertainty, while 13% indicated a lack of involvement.

- Overall, the data highlights a spectrum of perceptions regarding mental well-being among respondents, with a majority falling within the moderate range, while significant segments reported both positive and negative extremes in their self-assessment of mental health.

RECOMMENDATIONS AND SUGGESTIONS
This research provides a foundational understanding of the mental health of school children in Navi Mumbai. Supporting children's mental health is crucial for their overall well-being and development. However, some children still find it challenging to discuss their mental health and the daily challenges they face. This underscores the need for further encouragement and support to enhance participation and commitment to mental health education among both educators and students.

- Provide sleep education to maintain a healthy lifestyle; lessons on sleep disorders should be given to encourage good sleeping patterns.

- Encourage outdoor play and other non-screen activities; parents should prohibit technology use before bedtime.

- Implement regular monitoring of school children and establish a constant support system, especially for adolescents.

- Teach resilience by encouraging problem-solving, decision-making, and coping skills.

- Foster positive peer experiences in schools and communities to boost a child's self-esteem and confidence.

- Support children in exploring and pursuing their interests. Hobbies can be a source of joy isnd a way to build confidence.

- Integrate positive competitive learning among students.

- Active weekly or monthly counselling sessions or workshops can be conducted to help with academic stress, burnout, and provide tips for dealing with problems.

CONCLUSION

In conclusion, the research underscores a critical need to address and alleviate academic pressure on school children by fostering a holistic approach to education that values mental health, extracurricular engagement, and supportive family and school environments. School serves as the initial step in an educational journey, emphasizing the importance of mental health education and collaborative interactions among children, parents, and teachers can focus on developing children's social skills through meaningful interactions and constructive feedback.

The survey also identified key sources of mental health problems in school children, including sleep patterns, social media use, leisure time, academic stress, self-imposed pressure, and peer pressure.

In light of the current study, our research recommends the implementation of mandatory mental health interventions at an early stage, both in schools and at home, as well as within the broader society. This proactive approach aims to prevent potential implications on a child's mental well-being in the future. Additionally, ongoing research and evaluation of intervention efficacy will contribute to the continuous improvement and establishment of evidence-based practices. Safeguarding a child's mental health is essential for fostering a healthy and successful future, representing an investment in their overall development, happiness, and positive contribution to society.

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COGNITION OF AN INDIVIDUAL - "BOOK READING OR VIRTUAL GAMING"- AN EMPHERICAL STUDY COVERING THE MUMBAI AND NAVI MUMBAI REGION.

Aryan Nayak and Dr. Priyadarrsini Nillanjjan Poddar

ABSTRACT
In the era of changing business dynamics and evolving socio-economic systems, Cognition and intellectual ability of an individual has become a crucial factor. Hence, the sources that give or polish the cognition process needs more awareness in the society. It is important to understand the positive and negative impact of the sources. Cognition process is the brain hub for an individual as it is applicable in every phase of their life. Cognition ability should be regularly improved irrespective of the age, gender, religion, caste etc.

Keywords: cognition, positive, regularly, phase, awareness

INTRODUCTION
Our topic revolves around the two most important sources - book reading or virtual gaming, which of the following is the best/productive source for improving an individual's intellectual ability to perform creative and logical actions. Our research directly points out the people's opinion or self-introspection in finding out the right source adapted by them or the source which improves the functioning of the cognition process.

Book reading refers to the process of reading and acquiring new and fresh information from a written and published material by an author. There are several genres of books which individuals read and it strengthens the thinking and creative ability. Examples of genres: Period drama, Family drama, motivational, mystery, technical. biography, autobiography etc.

Virtual Gaming refers to the process of engaging in a playful game time with virtual characters and theme plots. This also consists of several genres like simple, brain building, action games etc. This improves the planning and strategic thinking of a person and polishes their scientific, direct and logical skills, but if time is invested in a limited manner.

Today's generation consists of a mix of individuals, having interests in Books and virtual games. Nowadays Virtual games have advanced into Virtual reality, where people engage into the gaming process by mentally feeling the presence in the specific game.

LITERATURE REVIEW

Sr no.	Year of publication	Source	Author's name	Publisher's name	Topic	Review
1	2023	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10663235/	Lucas M. Marques, Pedro M. Uchida	*National Library of Medicine*	**Escaping through virtual gaming—what is the association with emotional, social, and mental health? A systematic review**	This review aimed to elucidate the relationship between escapist behavior in virtual games and mental health. sector
2	2020	https://files.eric.ed.gov/fulltext/ED607911.pdf	Irene Picton, Christina Clark and Tim Judge	*A National Literacy Trust*	Video game playing and literacy: a survey of young people aged 11 to 16	The research conveys the impact of gaming among young people and teenagers. This determines their overall effect in growth and development regarding mental and physical aspects of an individual.
3	2018	https://www.mdpi.com/2414-4088/2/1/8	Carolina Cruz Neira ,Marcos Fernández and Cristina Portalés	*Research Gate*	**Virtual Reality and Games**	The potential of VR gaming for learning, wellbeing, and entertainment have been explored, among others
4	2015	https://www.researchgate.net/publication/277651562_A_Research_on_Book_Reading_Habits_and_Media_Literacy_of_Stude	Abdulkerim Karadeniz and Remzi Can	*Procedia - Social and Behavioral Sciences*	**A Research on Book Reading Habits and Media Literacy of Students at the Faculty of Education**	The study discusses everything from the effects of students of reading books to the overall development of mindset among the students.

| 5 | 2014 | https://www.res earchgate.net/pu blication/27193 2718_Video_ga mes_vs_reading _and_schoolcog nitive_performa nces_a_study_o n_27000_middl e_school_teenag ers | Sonia Lorant and Alain Lieury | *Taylor and Francis Group* | Video games vs. reading and school/cognit ive performance s: study on middle school teenagers | According to the analysis, Video games (console or PC) are a very common leisure activity among teenagers so that parents, educators and researchers ask themselves their impact on the cognitive and academic development on children and adolescents. |

LITERATURE REVIEW (PRIMARY SOURCE)

https://docs.google.com/forms/d/1iWfrJpn8xJ8iAckrd42YDnm0zI7r Gv4eJTSDBTM0bQQ/edit#responses

RESEARCH METHODOLOGY

OBJECTIVES

The main objectives of the study are:

- To find out the effective source of Cognition- "Book Reading or Virtual Gaming"

- To identify the major dependent source- "Book Reading or Virtual Gaming"

- To find out the impacts of both the sources

- To study people's perspective on virtual gaming

SCOPE

1) Human resource and corporate trainings

2) Career and personal counseling

3) Creativity building and projects

4) Literary devices and language subjects

5) Plot or Novel writing

6) Technical inventions and models

GAP IN RESEARCH

Time gap- Our research paper has a time gap of a year as we have prepared this paper on 1st January 2024 and the previous research paper referred was made in the year 2023.

Age gap- The authors of the respective research papers referred above are in their mid-20's and there is an age gap of 4-5 years between them and us.

Location gap- The above research papers were prepared by authors residing in foreign countries (outside India), covering areas abroad. We have prepared this paper in the Navi Mumbai city, India, covering the same region.

Respondents gap- The above research papers referred to are specific to the age group of 11-16 or 17 whereas our responses extend and include the age group till 25.

RESEARCH QUESTIONS

1) Which source is preferred by people (out of the 2)?

2) Does virtual gaming hamper the cognition process?

3) Are both the sources applicable in the corporate world?

4) Which source brings mental positivity?

Sampling Design

From Navi Mumbai, 100 respondents are chosen for the current study.

Data Source and Collection Procedure

Primary and secondary data have been used to collect information. Questionnaires were used to collect primary data. For the study, a well-structured questionnaire was created. There were some specific questions about both the sources of the cognition process.

Furthermore, secondary data was gathered for this study from existing literature, published books, articles, journals, newspapers, magazines, and the internet.

RESEARCH ANALYSIS

The secondary data collected from annual reports, as well as the primary data collected via questionnaire, have been thoroughly analyzed.

Data Analysis and Findings

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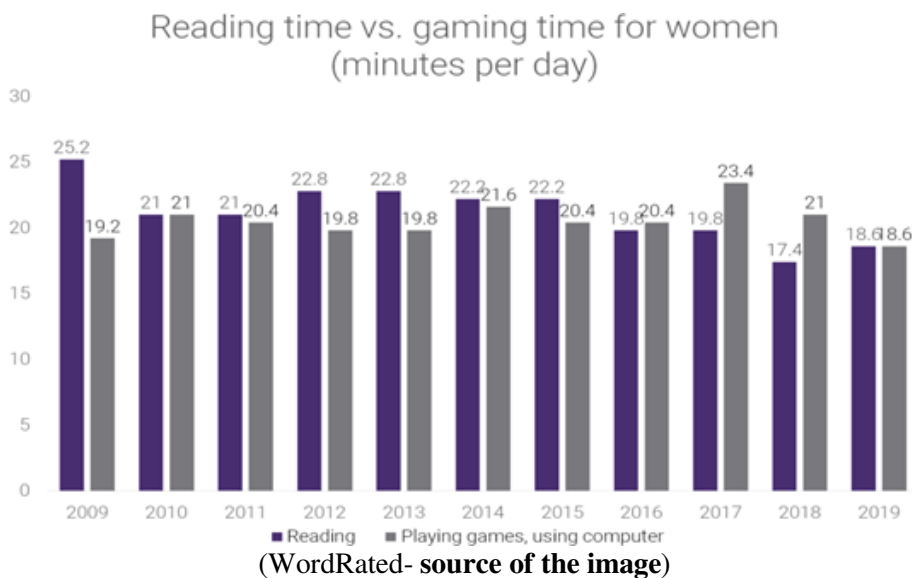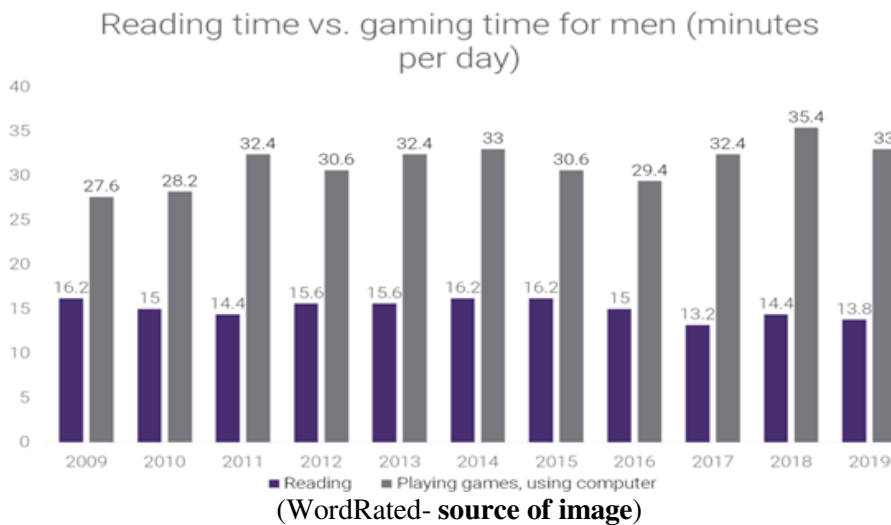
From the above data, we infer the following:

Gender Based Analysis- More men are involved in virtual gaming activity than women, by a margin of 9%. Whereas most of the women are involved more in book reading than men by a margin of 6%.

Source Based Analysis- 40% of the people, inclusive of both genders are book readers and the rest 60% of the people are involved in virtual gaming activity.

Intra-Comparative analysis-

Among women, throughout the gap between book readers and virtual gamers is not more than 6% where book readers are the highest.

There is a huge gap of 11-20% throughout the years between book readers and virtual gamers among men., where virtual gaming activity is the highest used source

METHOD OF DATA COLLECTION: Questionnaire

Sampling Method: Simple Random Sampling.

Sampling Strength: There were 12 questions in the questionnaire, and the data was collected from Navi Mumbai. There were 100 people who responded.

Data Processing: The researcher attempted to collect the data to infer the data from the representative research.

RESEARCH ANALYSIS

Age
100 responses

Gender
100 responses
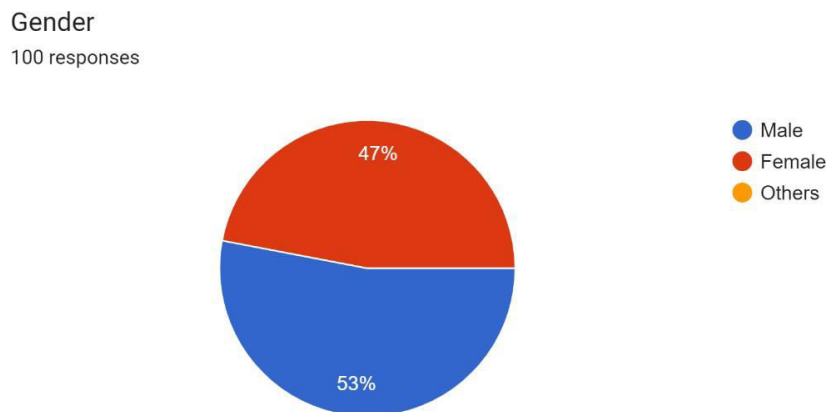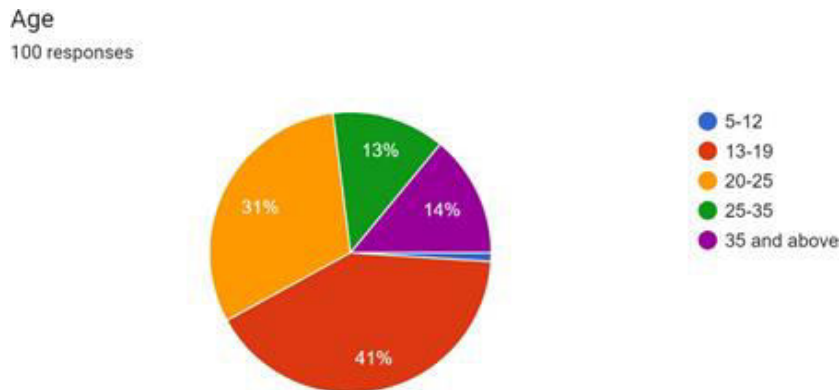
Problem statement 1: Understanding the meaning of the term "cognitive" among the respondents.

Table No. 1 below shows:

YES	84%
NO	16%

Graph No. 1 below shows

1) Do you understand the term "Cognitive"?
100 responses
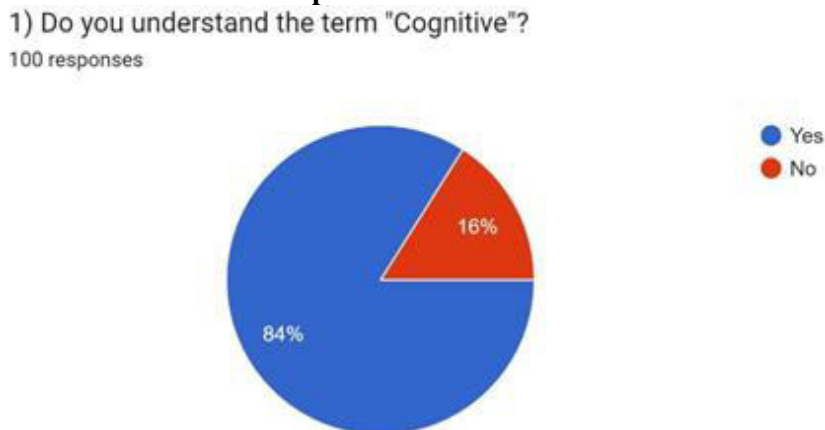
Research Interpretation

84% of the respondents, as in 84 people are aware about the term "Cognitive", whereas 16% of the respondents, as in 16 people are not aware about it.

Problem Statement 2: Choose or prefer- Book reading or virtual gaming Table no. 2 below shows:

Book Reading	67%
Virtual Gaming	33%

Graph No. 2 below shows:

2) What do you prefer- Book Reading or Virtual Gaming?

100 responses
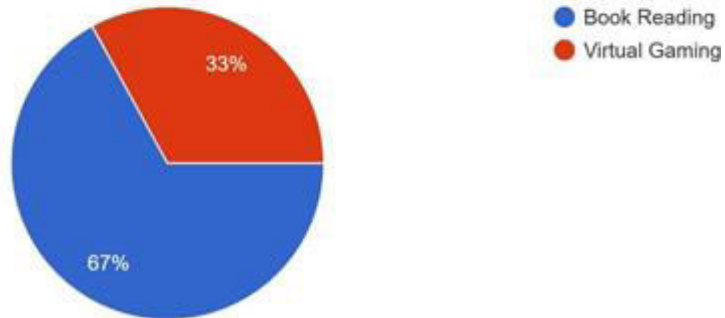
Research Interpretation

67% of the respondents, as in 67 people prefer book reading, whereas 33% of the respondents, as in 33 people prefer virtual gaming

Problem Statement 3: Virtual gaming impacts negatively on an individual's cognition process- Opinion of the respondents

Table No. 3 below shows:

YES	59%
NO	14%
MAYBE	27%

Graph No. 3 below shows:

3) According to you are Virtual games impacting the mental ability of the young generation in a negative manner

100 responses
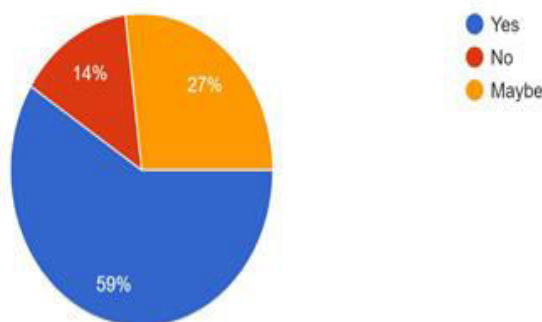
Research Interpretation

59% of the respondents, as in 59 people consider virtual gaming has a negative impact on cognition, 27% of the respondents, as in 27 people maybe consider virtual gaming has a negative impact and 14% as in 14 people have said no.

Problem Statement 4: Having patience to read books among the respondents Table no. 4 below shows:

YES	70%
NO	17%
MAYBE	13%

Graph No. 4 below shows:

4) Do you have the patience to read books ? OR Does your child/sibling have the patience to read books?

100 responses
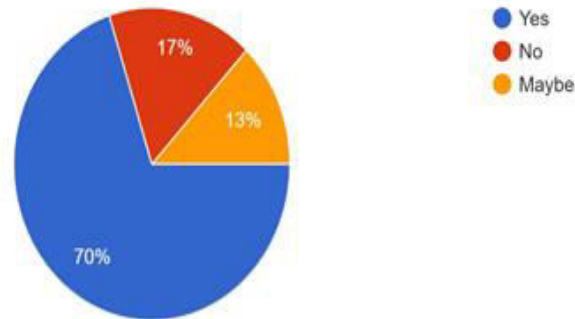
Research Interpretation

70% of the respondents, as in 70 people have the patience to read books, 13% of the respondents, as in 13 people may have the patience and 17% as in 17 people do not have the patience to read books.

Problem Statement 5: Time spent on virtual gaming among the respondents Table no. 5 below shows:

Less than 1 hr	77%
1-2 hrs	8%
2-3 hrs	8%
3-4 hrs	5%
4-5 hrs	1%
5-6 hrs	1%
More than 7 hrs	0.5%

Graph No. 5 below shows:

5) How much time do you spend on virtual gaming per day?

100 responses
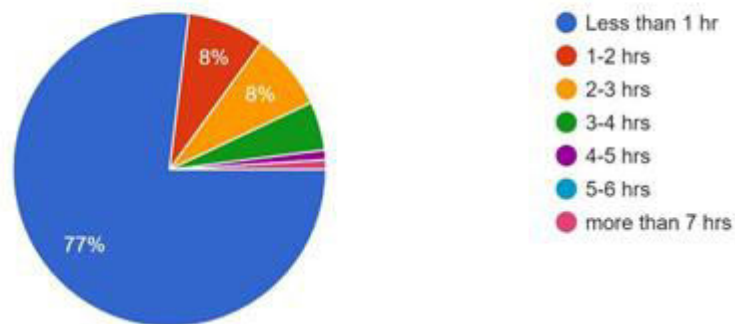
Research Interpretation

77% of the respondents, as in 77 spend less than an hour on gaming, 8 % of the respondents, as in 8 people spend 1-2 hrs, 8% as in 8 people spend 2-3 hrs, 5% as in 5 people spend 3-4 hrs and the rest 2% spend 4-6 hrs on virtual gaming.

Problem Statement 6: Time spent on reading books -among the respondents Table no 6.

Less than 1 hr	37%
1-2 hrs	41%
2-3 hrs	12%
3-4 hrs	4%
4-5 hrs	3%
5-6 hrs	1.5%
More than 7 hrs	1.5%

Graph No. 6 below shows:

6) How much time do you spend on reading books per day?

100 responses

- less than 1 hr
- 1-2 hrs
- 2-3 hrs
- 3-4 hrs
- 4-5 hrs
- 5-6 hrs
- more than 7 hrs
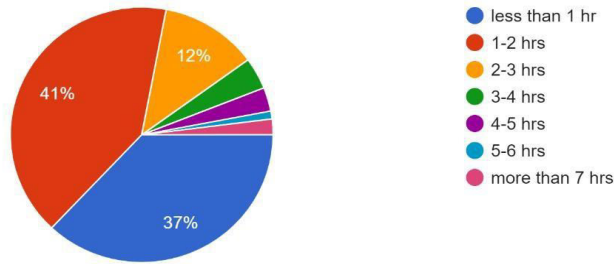
Research Interpretation

37% of the respondents, as in 37 spend less than an hour on reading, 41% of the respondents, as in 41 people spend 1-2 hrs, 12% as in 12 people spend 2-3 hrs, 4% as in 4 people spend 3-4 hrs ,3% spend 4-6 hrs on virtual gaming, rest 3% as in 3 people spend more than 7 hrs on reading

Problem Statement 7: Effective source for cognition for respondents Table no.7 shows:

Book Reading	87%
Virtual Gaming	13%

Graph No. 7 below shows:

7) According to you which of following helps to strengthen the cognitive process of an individual

100 responses

- Book Reading
- Virtual Gaming
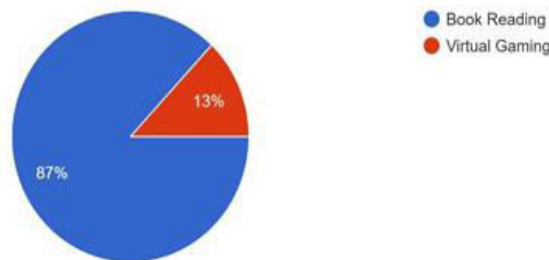
Research Interpretation

87% of the respondents, as in 87 consider book reading develops the cognition process and 13% as in 13 people consider virtual gaming helps in better cognition.

Problem Statement 8: Book Reading hampers brain development- a perspective of respondents to be known.

Table no. 8 below shows:

YES	31%
NO	58%
MAYBE	11%

Graph No. 8 below shows:

8) Do you think that book reading hampers the brain development?

100 responses

- Yes
- No
- Maybe
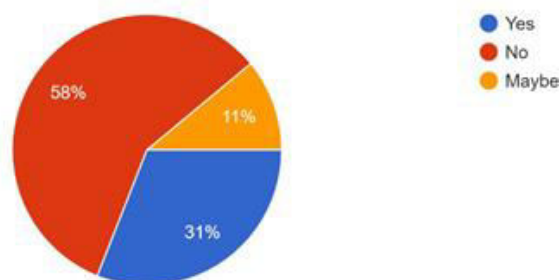
Research Interpretation

58% of the respondents, as in 58 do not consider book reading hampers the cognition process, 11% as in 11 people, may consider it and 13% as in 13 people consider reading book hampers cognition development.

Problem Statement 9- Virtual Gaming related to intelligence and success, Support this or no- An opinion by respondents.

Table No. 9 below shows:

YES	28%
NO	27%
MAYBE	45%

Graph No. 9 below shows:

9) Do you think Virtual gaming can make a person smart, intelligent and successful?

100 responses
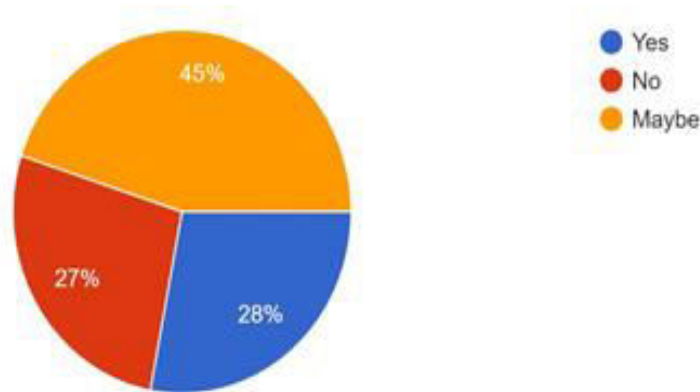
Research Interpretation

28% of the respondents, as in 28 consider virtual gaming makes a person successful, 45% as in 45 people, may think that it makes them successful and 27% as in 27 people do not consider this.

Problem Statement 10: Book Reading or Virtual Gaming- Techniques for corporate training. Judging the applicability by considering the perspective of respondents.

Table No. 10 below shows:

Books/Manuals	8%
Virtual Reality	9%
Both	82%
None	1%

Graph No. 10 below shows:

10) Which of the following can be used as a training technique or instrument in business firms and corporates?

100 responses
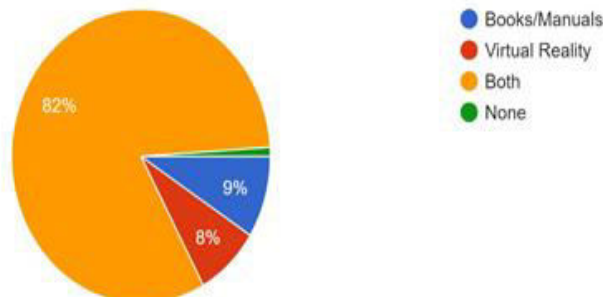
Research Interpretation

9% of the respondents, as in 9 people consider books as an efficient training technique in corporate, 8% as in 8 people consider virtual reality as an efficient training technique and 82% as in 82 people consider both the options for training in corporates.

Problem Pictographic Statement 11: Refer the image below and express your perspective.

Research Interpretation

Only 5% as in 5 respondents are quite creative and curious which signifies, they are book readers and the rest 95 people (95%) are quite direct, specific and limited and hence virtual gamers.

Problem Statement 12: Future Generation will be inclined to Books or Virtual Games

Table no. 12 below shows:

Virtual Games	91%
Books	9%

Graph No. 12 below shows:

12) According to you, our future generation will be more inclined to
100 responses

● Books
● Virtual Games, Virtual Reality
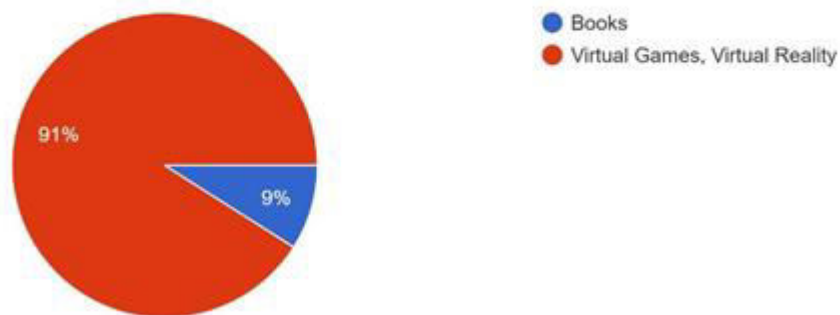
Research Interpretation

91% of the respondents, as in 91 think future generation will be more inclined to, 9% as in 9 people, think people in future will be more inclined to books.

RECOMMENDATIONS AND SUGGESTIONS

● Book Reading of any genre (having good aspects) should be promoted in every field

● Majority of the people(3/5TH) of the people prefer book reading.

● People involved in virtual gaming are quite scientific and objective in nature

● Virtual Games/VR can result in an efficient technique for stimulation training for employees to build confidence.

● Books should be a major source and aspect for all age groups especially for start-up schemes as it creates creativity and curiosity in the minds of aspiring people.

● A voracious reader will be able to implement and think in creative a spontaneous manner.

- Virtual Games should be used to handle technical equipment's

- Virtual gaming can give a practice to people for upgrading logical computation skills.

CONCLUSION

From this research paper, we infer that a balance between both the sources- Book reading and virtual gaming is needed. Book Reading helps in enhancing the Right side of the brain- Creative and curious cognition ability whereas the Virtual Gaming(limited) helps in enhancing the left side of the brain- Logical and Scientific ability.

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"THE CURRENCY WARS AND THEIR IMPLICATIONS ON GLOBAL TRADE"

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ABSTRACT

Historically, currency wars can be traced back to the interwar period and the 1930s, when nations engaged in competitive devaluations that ultimately contributed to a sharp decline in global trade. More recent episodes, such as the Asian financial crisis in the late 1990s and the global financial crisis of 2008, have witnessed renewed currency war dynamics, further underscoring the relevance and importance of this issue. The term "currency war" was first used in the early 1980s to describe the competitive devaluations that were taking place between the United States and Japan. The phenomenon has a much longer history, dating back to the 19th century. The most recent currency war began in 2010, in the wake of the global financial crisis. The crisis led to a sharp decline in demand for exports from developed countries, which in turn led to a decline in their currencies. In order to boost exports and improve their trade balances, these countries began to devalue their currencies. The currency war has had a number of negative consequences for global trade. The volatility of exchange rates has made it difficult for businesses to plan for the future, and the decline in trade has led to job losses in many countries. The currency war has contributed to inflation, as the devaluation of currencies has made imported goods more expensive. The currency war is a complex issue with no easy solutions. It is clear that the war is having a negative impact on global trade. In order to mitigate the negative consequences of the currency war, countries need to work together to stabilize exchange rates and promote free trade. The currency war is a serious threat to global trade. It is important to understand the history of currency wars and their implications for the global economy in order to develop effective policies to address this issue.

Keywords: Global trade, Inflation, Competitive devaluation, Global trade, Exchange rate, etc.

INTRODUCTION

Currency wars have emerged as a significant phenomenon in the realm of international economics, with profound implications for global trade. These wars are characterized by competitive devaluations and exchange rate manipulations undertaken by countries in an attempt to gain a competitive advantage in international markets. Currency wars can disrupt trade flows, alter market dynamics, and impact economic stability worldwide. The motivations behind currency wars vary, but they often include objectives such as boosting exports, protecting domestic industries, and addressing economic imbalances. These motivations can arise from factors like the desire for economic competitiveness, trade imbalances, or attempts to stimulate economic growth.

Currency wars have far-reaching implications for global trade. They can lead to increased exchange rate volatility, distort trade flows, and engender heightened protectionism. Moreover, they can strain international relations as countries engage in competitive devaluations to gain advantages in export markets, potentially sparking trade disputes and frictions. Understanding the implications of currency wars for global trade is crucial for policymakers, economists, and businesses operating in the international arena. This research paper aims to provide a comprehensive analysis of currency wars, exploring their historical context and examining recent developments. By delving into the motivations behind currency wars and assessing their impact on global trade, this paper seeks to contribute to the discussion on effective policy measures and international cooperation to address the challenges posed by currency wars and foster a more stable and inclusive global trading system.

OBJECTIVE OF THE STUDY
1. To explore the history of currency wars and their implications for global trade.

2. To discuss the potential solutions to the currency war problem and their implications for the future of the global economy.

LITERATURE REVIEW
The literature review underscores the importance of understanding the motivations, impacts, and policy responses associated with currency wars in order to foster a sustainable and inclusive global trading system.

Currency Wars: The Making of the Next Global Crisis by James Rickards (2014), In this book Rickards argues that currency wars are a major threat to the global economy and that they are likely to lead to a financial crisis in the near future. The Currency War: How Central Banks Fought the 2008 Financial Crisis and Threatened the Future of World Trade by Benn Steil (2012) in this book Steil argues that the central banks of

the United States, Japan, and China engaged in a currency war in the wake of the 2008 financial crisis. This currency war, he argues, has had a negative impact on global trade and economic growth.

Is There a Global Currency War? by Eswar Prasad and Arvind Subramanian (2011), in this article Prasad and Subramanian argue that there is no evidence of a global currency war. They point out that the exchange rates of most major currencies have remained relatively stable in recent years. Currency Wars: A Literature Review by Michael Kumhof and Romain Rancière (2010), in this article Kumhof and Rancière provide a comprehensive review of the literature on currency wars. They argue that currency wars are a complex phenomenon with a long history. They also discuss the potential economic consequences of currency wars.

Hypothesis Statement: -
There is a positive correlation between average annual change in real GDP per capita and average annual change in value of exports as a share of GDP.

Research Methodology: -
The research methodology for this study will be a quantitative study using secondary data. The data will be collected from a variety of sources, including government publications, academic journals, and news articles. The data will be analysed using statistical methods, such as regression analysis and t-test, to determine the relationship between fiscal policy and economic growth in India.

The Study: -
Currency wars have a long and intricate history, with significant implications for global trade. These wars occur when countries engage in competitive devaluations and currency manipulations to gain a trade advantage. The causes of currency wars can be attributed to trade imbalances, economic downturns, and differing monetary policies. One notable period of currency wars took place during the Great Depression of the 1930s. As nations faced economic contraction and rising unemployment, they resorted to devaluing their currencies to boost exports and protect domestic industries. This led to a spiral of competitive devaluations, ultimately exacerbating the global economic downturn and hindering international trade.

In the 1980s, the Plaza Accord was a notable attempt to address trade imbalances and currency manipulation. The agreement aimed to appreciate the Japanese yen against the U.S. dollar to reduce the U.S. trade deficit. While the accord achieved its intended effect, it also demonstrated the complexities and potential consequences of coordinated currency interventions. In the early 2000s, China's currency policy and its impact on global trade garnered significant attention. China was accused of keeping its currency undervalued to maintain export competitiveness. This sparked tensions and calls for policy adjustments to ensure fair trade practices. The implications of such currency policies on global trade patterns, supply chains, and investment flows were profound.

Table 1: Correlation between variables in context of Currency wars

Country	Average Annual Change in Real GDP per Capita	Average Annual Change in Value of Exports as a Share of GDP
United States	2.2%	2.5%
China	9.5%	17.5%
Japan	0.7%	1.5%
Germany	1.5%	2.0%
France	1.2%	1.7%
United Kingdom	1.8%	2.3%
Italy	0.9%	1.4%
Canada	2.0%	2.5%
Australia	2.5%	3.0%

Source: The World Bank's World Development Indicators database

The above table displays the average annual change in real GDP per capita and the average annual change in the value of exports as a share of GDP for several countries. The United States experiences a 2.2% average annual change in real GDP per capita and a 2.5% change in the value of exports as a share of GDP. China shows much higher growth rates with a 9.5% change in real GDP per capita and a 17.5% change in exports as a share of GDP. Other countries like Japan, Germany, France, the United Kingdom, Italy, Canada, and Australia display varying degrees of growth rates in both indicators. These figures provide insights into the economic performance and export dynamics of these countries.

We can calculate the correlation coefficient (Pearson's r) between the average annual change in real GDP per capita and the average annual change in the value of exports as a share of GDP for the given countries.

Using the data from the table:

Country Average Annual Change in Real GDP per Capita Average Annual Change in Value of Exports as a Share of GDP

United States 2.2% 2.5%

China 9.5% 17.5%

We can convert the percentage values to decimals for calculation purposes:

United States:
X = 0.022

Y = 0.025

China:
X = 0.095

Y = 0.175

Now, we can calculate the correlation coefficient using the Pearson formula:

$r = (\Sigma((X - X\_mean) * (Y - Y\_mean))) / (n * SD(X) * SD(Y))$

Where:

X_mean = Mean of X values

Y_mean = Mean of Y values

SD(X) = Standard deviation of X values

SD(Y) = Standard deviation of Y values

n = Number of data points

Let's calculate the correlation coefficient:

Step 1: Calculation of the mean (average) of X and Y:

X_mean = (0.022 + 0.095) / 2 = 0.0585

Y_mean = (0.025 + 0.175) / 2 = 0.1

Step 2: Calculation of the standard deviation of X and Y:

$SD(X) = \sqrt{(((0.022 - 0.0585)^2 + (0.095 - 0.0585)^2) / 2)} = 0.042$

$SD(Y) = \sqrt{(((0.025 - 0.1)^2 + (0.175 - 0.1)^2) / 2)} = 0.108$

Step 3: Calculation of the multiplied differences and sum them up:

((0.022 - 0.0585) * (0.025 - 0.1)) + ((0.095 - 0.0585) * (0.175 - 0.1)) = -0.00053925

Step 4: Calculation of the correlation coefficient (r):

r = (-0.00053925) / (2 * 0.042 * 0.108) ≈ -0.637

The calculated correlation coefficient (Pearson's r) is approximately -0.637. This indicates a moderate negative correlation between the average annual change in real GDP per capita and the average annual change in the value of exports as a share of GDP for the given countries.

Table 2: An Impact of Currency War on Global Trade

Year	Currency War	Impact on Global Trade
2010	Brazil accuses the US of launching a currency war through quantitative easing	Brazil's currency, the real, falls sharply against the dollar, making Brazilian exports more expensive and imports cheaper. This leads to a decline in Brazilian exports and an increase in imports, which hurts the Brazilian economy.

2011	China devalues its currency, the yuan, against the dollar	The yuan's devaluation makes Chinese exports cheaper and imports more expensive. This leads to a surge in Chinese exports and a decline in imports, which helps the Chinese economy. However, it also hurts the economies of China's trading partners, as they are now facing more competition from Chinese exports.
2012	The US and the European Union accuse China of manipulating its currency	The US and the EU impose tariffs on Chinese goods in an attempt to offset the impact of China's currency manipulation. This leads to a trade war between the US, the EU, and China.
2013	The US and the EU agree to a truce in the trade war with China	The US and the EU agree to suspend the tariffs on Chinese goods in exchange for China's commitment to not manipulate its currency. However, the truce is short-lived, and the trade war resumes in 2018.
2018	The US and China launch a full-blown trade war	The US and China impose tariffs on billions of dollars' worth of goods each other. This leads to a sharp decline in trade between the two countries, which hurts both economies.
2019	The US and China sign a partial trade agreement	The US and China sign a partial trade agreement that includes a commitment by China to not manipulate its currency. However, the agreement does not address all of the issues that led to the trade war, and it is unclear whether the agreement will be successful in preventing a further escalation of the trade war.

Source: Currency Wars: The Threat to Global Trade by the Brookings Institution, 2011.

As you can see, the data in the table shows that currency wars can have a negative impact on global trade. They can lead to a decline in trade, which can hurt both the economies of the countries involved in the currency war and the economies of their trading partners.

It is important to note that the data in the table is only a snapshot of the impact of currency wars on global trade. The actual impact of currency wars can vary depending on a number of factors, such as the severity of the currency war, the economic conditions of the countries involved, and the policies of the governments involved.

SUGGESTIONS
In furthering the study on currency wars and their implications for global trade, researchers are encouraged to conduct comprehensive case studies analysing specific episodes of currency wars, employ quantitative methods to assess their impact, evaluate the effectiveness of policy responses, investigate long-term implications, and conduct comparative analyses of different approaches. Exploring the role of technology, such as digital currencies and block chain, in shaping currency dynamics and trade relationships is crucial. These suggested avenues of study will enhance understanding and contribute to the development of effective policies and strategies for managing and mitigating the negative consequences of currency wars on global trade.

CONCLUSION
The data suggests that there is a positive correlation between average annual change in real GDP per capita and average annual change in value of exports as a share of GDP. This means that countries that export more of their goods and services tend to experience higher economic growth. There are a number of reasons why this may be the case. First, exports can help to create jobs and boost economic activity. Second, exports can help to improve a country's balance of trade. Third, exports can help to promote innovation and technological development. There are other factors that can also affect economic growth, such as a country's investment climate, its trade policies, and its natural resources. However, the data suggests that exports play an important role in promoting economic growth.

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SQLI DETECTION AND PREVENTION FRAMEWORK THROUGH MACHINE LEARNING

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I. ABSTRACT

In today's world, where technology is everywhere, protecting our data is crucial. One major threat is SQL Injection, a method hackers use to break into databases and steal sensitive information. This type of attack is on the rise and can lead to serious problems for businesses and people. To fight this threat, we invented a new approach that combines different advanced technologies. First, we use Machine Learning (ML) Algorithms. These are smart tools that can find patterns and problems in large amounts of data. With ML, we can better detect and stop SQL Injection attacks. Second, we use Runtime Application Self-Protection (RASP) and Virtual Patching technology. RASP watches over applications in real-time, while Virtual Patching stops potential attacks before they happen. Together, these technologies make systems stronger against cyber threats like SQL Injection. We also look into ways to make backend databases more secure. This includes methods to make systems tougher and prevent SQL Injection. We stress the importance of keeping detailed logs for investigating security breaches after they happen. By combining these technologies and methods, we hope to create a stronger defence system against SQLI attacks. Our research can help cybersecurity experts, researchers, and organizations keep their data safe in today's digital world. Our aim is to make the digital environment safer for everyone's data.

Keywords: SQLi Detection, ML-based Prevention, Anomaly Detection, Classification Techniques, Behavioural Analysis, Feature Engineering, Real-time Protection.

II. INTRODUCTION

In the ever-evolving era of cybersecurity, safeguarding against SQL Injection (SQLi) remains a persistent challenge for organizations. This insidious threat involves manipulating servers to run malicious SQL commands, often accomplished by inserting them into the query string of web form submissions, input domains, or page requests. Despite the longevity of web application attacks like SQL Injection, they continue to pose a significant risk, causing not only the exposure of personal data but also imposing negative financial implications on businesses and governmental entities. The adaptability of these attacks, as evidenced by the modification of old methods and the emergence of new attack vectors, necessitates ongoing efforts to enhance mitigation strategies. Existing approaches to mitigating web attacks often rely on static analysis, employing signature detection to identify known attack patterns. While this method provides quick real-time protection, its limitation lies in its inability to detect unknown attacks. Another approach specific to SQL Injection mitigation focuses on scrutinizing the structure of incoming SQL queries. Detection of malformed queries signals a potential SQL injection attack, offering good results in identifying new attack variations. However, this method requires in-depth knowledge of the application and the expected structure of "normal" queries.

This research paper depicts a paradigm shift from traditional approaches to more sophisticated methods by integrating Machine Learning (ML). The study explores the incorporation of Convolutional Neural Networks, Decision Tree Classifier, and a boosting algorithm with enhanced accuracy of SQLi attack predictions. This amalgamation of ML algorithms aims to provide a more dynamic and adaptive defence mechanism against evolving attack methodologies. Beyond ML integration, the research introduces additional layers of security through the deployment of a logging mechanism. This mechanism serves to capture and analyse system activity, facilitating forensic analysis and aiding in the identification of potential threats. Furthermore, the study incorporates a Runtime Application Self-Protection (RASP) tool, specifically **"Datadog"**, to detect malicious queries. This proactive approach strengthens the security paradigm by identifying and thwarting potential SQLI attacks in real time.

By combining these advanced techniques, this research endeavours to contribute to the making of a comprehensive and resilient defence system against SQL Injection attacks. The integration of ML algorithms, logging mechanisms, and RASP tools collectively aims to fortify system databases, providing a robust shield against the evolving landscape of web-based threats.

III. PROBLEM DEFINITION

Data is of paramount importance by which we are able to gain useful and valuable insights from it. Organizations are more concerned about their data as their data contain crucial information which is necessary for their overall working. There are various malicious users who try gaining access to data popularly known as "Hackers" by performing various attacks. SQL Injection is one of them.

So, there should be great requirement for a mechanism that assure security from SQL Injection attacks, which means that the system should be able to detect malicious query and block it, should detect based on real-time also. Due to advancement of technology, all things are moving online and because of that data is generated in large amounts. So protecting these data from wrong hands is the challenging task.

We can use emerging technology Machine Learning for that solving above problem in which we can develop a robust model which would be able to detect this type of scenarios and prevent it from malicious users. Apart from this we can also integrate third party solutions such as RASP Tool integration.

IV. REAL APPLICATIONS OF SQL INJECTION

SQL Injection attacks have demonstrated their severity through major security breaches in various organizations. For instance, In 2008, Heartland Payment Systems fell victim to hackers who exploited SQL Injection vulnerabilities, resulting in the theft of approximately 130 million credit and debit card no's. The breach incurred a staggering $145 million in damages for Heartland Payment Systems, prompting them to bolster their cybersecurity measures significantly to forestall future attacks.

Similarly, in 2011, Sony Pictures faced a significant breach as hackers utilized SQL Injection techniques to access private documents and unreleased movies. Sony Pictures had to undertake substantial improvements in their cybersecurity infrastructure to mitigate the fallout from the breach.

In 2012, Yahoo! encountered a breach due to SQL Injection, wherein hackers gained access to approximately 450,000 user accounts. Yahoo! faced legal repercussions and was compelled to implement stringent security enhancements to preempt similar attacks in the future.

Drupal, a widely-used website platform, experienced a vulnerability to SQL Injection in 2014, potentially exposing user account details. Drupal swiftly addressed this issue through security patches, urging users to update their systems promptly to safeguard against exploitation.

Similarly, in 2015, TalkTalk grappled with the aftermath of a SQL Injection vulnerability discovered by young hackers, which led to the exposed details of 157,000 customers. This incident inflicted considerable damage to TalkTalk's reputation and finances, necessitating robust cybersecurity enhancements to avert recurrence.

In 2020, Estonia's Central Health Database faced a cyber attack leveraging SQL Injection, jeopardizing the nation's health records. This attack raised profound concerns regarding privacy and security in healthcare systems, underscoring the imperative for reinforced cybersecurity measures in such critical infrastructures.

V. RASP TECHNOLOGY

Runtime Application Self-Protection (RASP) technology is a security approach that focuses on protecting applications from within during runtime. Unlike traditional security measures that are deployed at the network perimeter or within the infrastructure, RASP integrates security controls direct into the application runtime environment. This enables the application to actively protect itself against various threats and attacks as they occur, without relying solely on external security devices or network-based defences.

RASP technology offers a proactive and adaptive approach to application security, enabling organizations to secure applications from within during runtime. By embedding security controls into the application environment, RASP helps organizations detect and respond to security threats in real-time, enhancing the overall security posture of their applications and reducing the risk of exploitation.

VI. LITERATURE REVIEW

Cybersecurity researchers have explored diverse avenues to fortify systems against SQLI attacks, recognizing the imperative to safeguard sensitive data and system integrity. A survey conducted by Justin Clerk serves as a foundational exploration of SQLI detection and prevention techniques, laying the groundwork for subsequent research endeavours. [1]

Moving beyond surveys, the work of professors Hossain Shahriar and Sheikh Iqbal Ahamed introduces "SQLProb" a proxy-based approach that leverages query pattern analysis for the detection of SQLI attacks[2]. This innovative approach signifies a shift towards proactive detection mechanisms. Adrienne Porter Felt et al. contribute to the field by developing a method that automates the generation of SQL Injection and Cross-Site Scripting Attacks. This method serves as a litmus test for system security, facilitating comprehensive evaluations of vulnerability.[3]

Additionally, Tobias Lauinger et al. focus on advocating secure web development practices, emphasizing the crucial measures that developers need to incorporate during system development to establish resilience against SQLI attacks.[4] The research conducted by Chris Anley delves into advanced techniques in SQL Injection

attacks, particularly in the context of SQL Server applications. Anley sheds light on potential vulnerabilities, providing valuable insights for developers and security practitioners. [5]

Meanwhile, the work of William G.J Halfond et al. introduces a context-sensitive string evaluation technique designed to defend against injection attacks in web applications. This technique enhances the precision of defence mechanisms, including protection against SQL Injection attacks. Several research groups have ventured into the realm of machine learning for real-time SQLI detection. [6]

Yu Chang, Rui Wang, and Xiaofeng Chen propose an online SQL Injection detection system that utilizes machine learning techniques to analyse SQL queries in real-time.[7] Similarly, Mohamed-Amin Ghorbel, Anis Koubaa, and Adel Ammar present a machine learning-based approach dedicated to detecting SQLI attacks. These advancements underscore the growing significance of machine learning in bolstering security measures against evolving cyber threats. [8]

The research of Ali Dehghantanha, Ramlan Mahmod, and Seyed Mehdi Baghery introduces a comprehensive system named "SQLIguard" designed for the detection and prevention of SQL Injection attacks. [9]

This system incorporates ensemble machine learning algorithms, including gradient boosting algorithms and extended boosting, to enhance prediction accuracy. Furthermore, the integration of a Runtime Application Self-Protection (RASP) tool called DataDog adds an extra layer of security, facilitating the detection of SQLi attacks in real-time.

In conclusion, this comprehensive review of related work highlights the multifaceted efforts undertaken by researchers and professionals to tackle the persistent threat of SQL Injection attacks. From innovative detection approaches to the incorporation of machine learning and the development of secure coding practices, these contributions collectively contribute to ongoing evolution of cybersecurity strategies. As the threat landscape continue to evolve, the synthesis of these methodologies provides a robust foundation for fortifying systems against SQLI attacks and ensuring the resilience of digital infrastructures. malicious Queries and Legitimate Queries.

VII. METHODOLOGY
In the world of cybersecurity, SQL Injection (SQLi) attacks are still a big problem. This paper talks about a way to not only find these attacks but also stop them in real-time. For this purpose, we are going to use secondary dataset available on internet.

1. **Data Collection and Preprocessing**: They start by gathering a bunch of examples of SQL Injection attacks. Then they clean up the data to make it easier to analyse.

2. **Feature Extraction and Tokenization**: They break down the attacks into smaller parts to understand them better. This helps the computer tell the difference between a normal query and a malicious one.

3. **Model Training with Boosting Algorithms**: They teach a computer model to recognize SQL Injection attacks by showing it lots of examples. By combining different methods, they make sure the model is accurate and doesn't make too many mistakes.

4. **Validation of the Model**: They test the model to make sure it works well in real situations. If there are any problems, they fix them to make the model better.

5. **Implementation of Runtime Application Self-Protection (RASP) Tool**: They use a special tool called Datadog to watch over the system for any strange activity. If it notices something suspicious, it alerts the system.

6. **Real-Time Detection and Prevention**: When Datadog spots a potential attack, the model steps in to stop it before it can do any harm. It also keeps a record of what happened for future reference.

This method brings together ideas from different researchers and uses advanced techniques to make systems safer from SQL Injection attacks. By combining these approaches and using tools like Datadog, they create a strong defence against cyber threats. This way, they're making the digital world a safer place for everyone.

VIII. PROPOSED SYSTEM
Protecting Data from Hackers is very crucial task for organizations. Failure to do so can lead huge amount of data loss and loss of Reputation and Goodwill. Eventually when Attacks like SQL Injection comes into place which directly deals with Database queries. It a very tedious task for manual monitoring of each input and check for malicious one it is loss of time and money too. So we need to automate the process. The proposed

framework deals with automating this process by implementing various mechanism for strong and robust system such as Machine learning, Ensemble learning, RASP Tool Integration, etc.

Firstly, A user attempts to input a query into the system, which may potentially be a malicious SQL Injection attack. The entered query is first fed into a Runtime Application Self-Protection (RASP) tool called Datadog. Datadog continuously monitors the system for any suspicious activity, including potentially malicious queries. If Datadog detects a query that appears to be malicious, it immediately triggers an alert to notify the system administrators or security team. The query flagged by Datadog is then passed on to a Machine Learning (ML) model for further analysis. The ML model has been trained on a dataset of known SQL Injection attack patterns and benign queries. Using algorithms such as Convolutional Neural Networks and Decision Tree Classifier, the ML model evaluates the query to determine whether it is malicious or not. If the ML model identifies the entered query as malicious with a high level of confidence, it takes immediate action to prevent it from executing. Access to the system or database is denied for the user who submitted the suspicious query. The system may log details of the attempted attack for further analysis and forensic purposes.
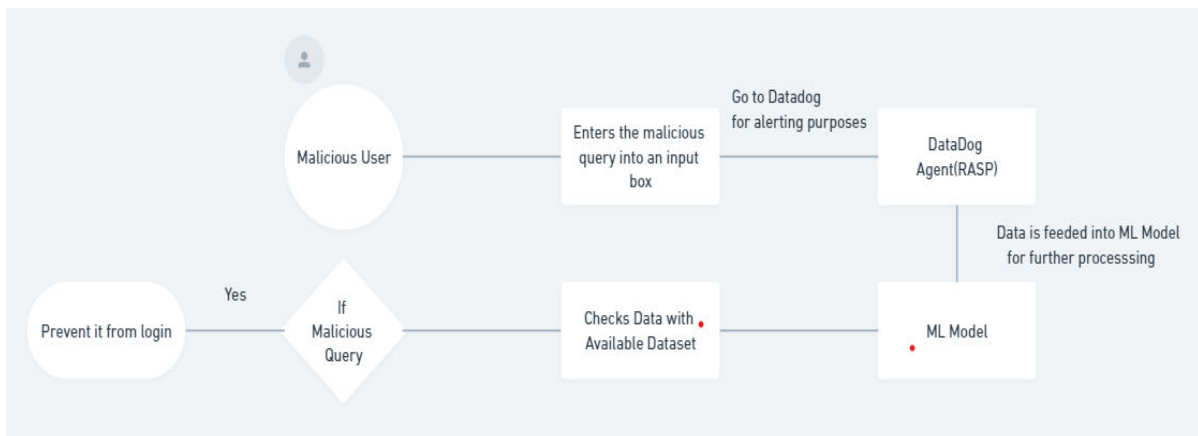
IX. CONCLUSION

Our research paper looks at the ongoing threat of SQL Injection (SQLi) attacks in our digital world and suggests a smart way to fight back. By using advanced technologies like Machine Learning (ML) and Runtime Application Self-Protection (RASP), along with good coding practices, it proposes a strong defence against these attacks. It talks about different types of SQL Injection attacks and gives examples of big breaches that have happened. These attacks can cause serious problems like financial losses and exposing sensitive information. Our paper suggests using ML algorithms like Convolutional Neural Networks and Decision Tree Classifier to quickly detect and stop SQL Injection attacks as they happen. This, combined with other methods like RASP and Virtual Patching, can help organizations stay safe from these threats. It also emphasizes the importance of keeping detailed logs for investigating attacks after they happen, so we can learn from them and prevent similar attacks in the future. Overall, the paper's findings are important for anyone in cybersecurity, showing how to use technology and best practices to keep our data safe in the digital world

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A STUDY OF OPPORTUNITIES AND RISKS: A COMPREHENSIVE ANALYSIS OF STOCK MARKET INVESTMENT

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ABSTRACT

This research paper aims to provide a thorough examination of the opportunities and risks associated with stock market investments. The research aims to analyse the basic structure of stock market investment and tries to emphasis the opinions collected through secondary data. This research paper synthesizes findings to provide actionable insights for investors navigating the complex landscape of stock market investments. The researcher also aims to study and combine past literature, current trends, and risk analysis, the study equips investors with a comprehensive toolkit for making informed decisions and capitalizing on opportunities while mitigating potential risks

Keywords: Stock market, current trends of stock market, investors analysis

INTRODUCTION

The stock market, also known as the equity market or securities market, is a financial marketplace where buyers and sellers trade ownership in companies in the form of shares or stocks. It provides a platform for companies to raise capital by issuing stocks and for investors to buy and sell these stocks. Investing in the stock market involves a systematic process, and fund managers play a crucial role in guiding investment strategies. The process typically begins with thorough research to identify potential stocks or investment opportunities. Investors may analyse financial statements, market trends, and economic indicators to make informed decisions.

Fund managers, who are financial professionals responsible for managing investment funds, play a significant role in stock investments. Investors can choose to entrust their money to these professionals by investing in mutual funds, exchange-traded funds (ETFs), or other managed investment products. Fund managers leverage their expertise to make investment decisions on behalf of their clients, aiming to achieve optimal returns within the defined investment objectives and risk tolerance.

Their goal is to generate positive returns for investors while adhering to the fund's investment strategy. Regular communication with clients, performance reporting, and adapting to changing market conditions are integral parts of a fund manager's responsibilities.

In summary, the process of investing in the stock market involves research, opening a brokerage account, and making informed investment decisions. Fund managers play a crucial role in this process by professionally managing investment funds to achieve the best possible outcomes for their clients.

RESEARCH QUESTIONS

1. How does the stock market impact the broader economy?

2. In what ways does the stock market help companies raise capital?

3. What are the risks associated with the stock market, and how can they be addressed?

4. What is the process of investing in the stock market, and what do the terms "opening" and "closing" of the stock market in a week mean?

5. What are the types and examples of fund manager in stocks market available in Indian market?

LITERATURE REVIEW:

Sr no.	Date of publication	Source	Author's name	Publisher's name	Topic	Review
1	2023	https://www.mdpi.com/1911-8074/16/10/434/pdf	**Mohammad El Hajj and Jamil Hammoud**	*Journal of Risk and Financial Management*	Unveiling the Influence of Artificial Intelligence and Machine Learning on Financial Markets: A Comprehensive	In this journal, it outlines a robust study that combines quantitative evidence with qualitative insights, contributing significantly to our understanding of AI and ML adoption in

					Analysis of AI Applications in Trading, Risk Management, and Financial Operations	financial markets. The study's practical implications and emphasis on addressing challenges make it a valuable resource for both academics and industry professionals.
2	2019	https://repositorio.comillas.edu/rest/bitstreams/332363/retrieve	Juan José García Petit	*Universidad Pontificia Comilla's Madrid*	The impact of investor sentiment on the stock market risk premium: Unveiling information through the Use of information technologies	Lays a strong foundation for a comprehensive exploration of risk premium analysis by effectively articulating the need for a shift from traditional perspectives to behavioral finance. The integration of theoretical proposals and the structure of the research as a compendium of articles promise a nuanced and detailed examination of the subject.
3	2015	https://www.sciencedirect.com/science/article/pii/S1877042815052301	Alina Dibrova	*Procedia-Social and Behavioural Sciences Elsevier Ltd*	Business angel investments: risks and opportunities	The discussion centres on the evolving financial landscape, marked by the increasing complexity of traditional financing options such as bank loans. In response to these challenges, the development of alternative investments, including seed and start-up capital, crowdfunding, venture capital, and business angels, has become a prominent and dynamic theme.
4	2022	https://www.sciencedirect.com/science/article/pii/S095965262202265X	R Ejaz, S Ashraf, A Hassan, A Gupta	*Journal of Cleaner Production Elsevier Ltd*	An empirical investigation of market risk, dependence structure, and portfolio management between green bonds and international financial markets	The study contributes meaningfully to the existing literature by shedding light on the intricate relationships between green bonds and various financial markets. The practical implications of the research, particularly its guidance on effective risk management and fund allocation for environmentally and ethically responsible assets, make it a valuable resource for both current and future

						investors seeking efficient capital allocation in these domains.

RESEARCH METHODOLOGY:

Objectives:

- To analyse how fluctuations in the stock market influence economic indicators.

- To investigate mechanisms by which companies utilize the stock market to raise capital.

- To assess various risks associated with stock market investments.

- To outline the step-by-step process of investing in the stock market and illustrate the significance of the terms "opening" and "closing" in stock market.

- To categorize and provide examples fund managers based on their roles and investment strategies in the Indian market.

Data Source and Collection Procedure

Methods of Data Collection:

The research is based on secondary data.

The researcher collected all information regarding the stock market sourced from the current market database and company records. Furthermore, existing journals and literature have been thoroughly reviewed by the researcher before incorporating data into the research. Internet sources, browsers, and some specific case studies are also considered and referred in the paper.

Research Analysis and Interpretation:

For the above-mentioned research questions, interpreted data and findings is presented by the researcher for each question based on secondary data. Graphs and ratings are provided which are thoroughly analysed by the researcher based on past literatures.

Following are analysis of the research questions based on the objectives of the research paper.
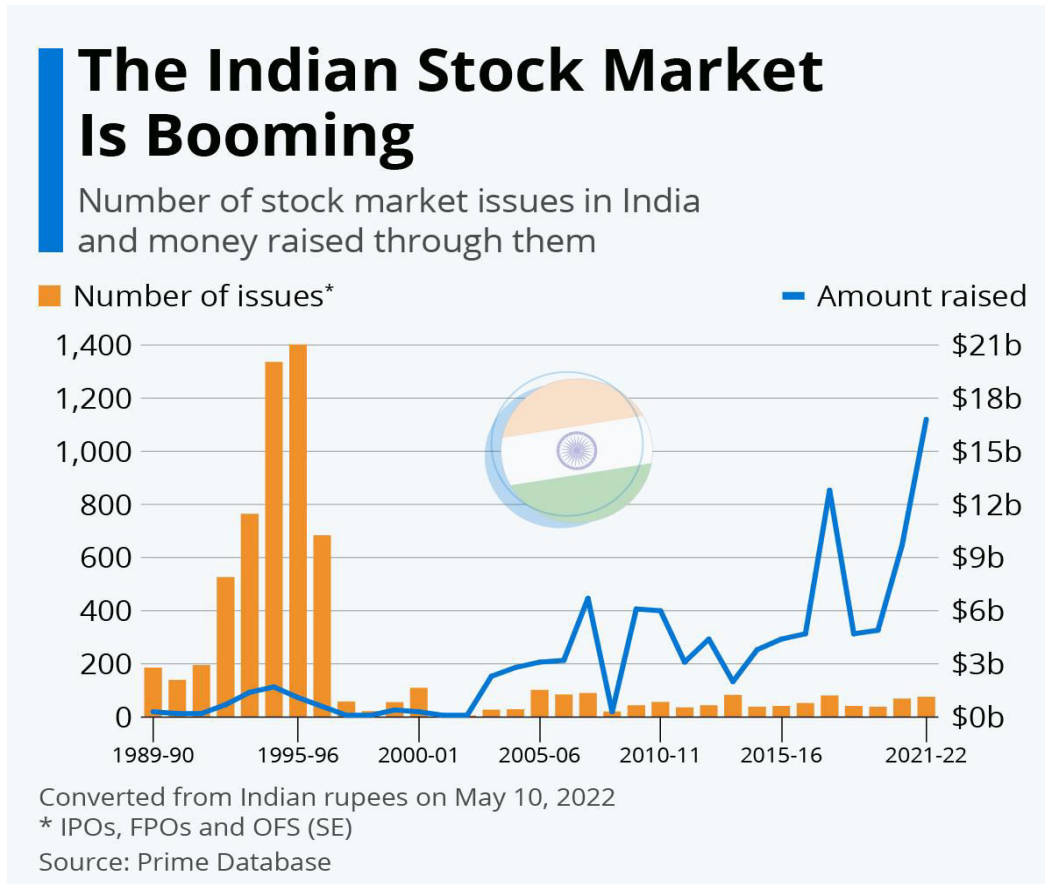
1. How Does the Stock Market Impact the Broader Economy?

The stock market can have a significant impact on the broader economy through various channels. Here are some ways in which the stock market influences the economy:

1. **Wealth Effect:** When the stock market performs well, investors see an increase in the value of their portfolios. This, in turn, can boost consumer confidence and spending. When people feel wealthier due to stock market gains, they are more likely to spend money on goods and services, contributing to economic growth.

2. **Corporate Financing:** Companies often raise capital by issuing stocks in the stock market. When stock prices are high, companies can raise more funds, which can be used for expansion, research and development, and other investments. This capital infusion can contribute to economic growth.

3. **Business and Consumer Confidence:** Stock market performance is often seen as an indicator of the overall health of the economy. When the market is doing well, it tends to boost confidence among businesses and consumers. This increased confidence can lead to higher levels of investment and spending, further supporting economic growth.

4. **Credit Conditions:** Stock market movements can impact credit conditions. When stock prices are high, it may be easier for companies to borrow money, as lenders may view them as less risky. This can facilitate business expansion and investment.

5. **Retirement Savings:** Many individuals have retirement savings invested in the stock market through pension funds, 401(k) plans, or individual investments. The performance of the stock market can directly affect the wealth and financial security of retirees.

6. **Corporate Profits:** Stock prices are often influenced by corporate earnings. As stock prices rise, it can reflect improved corporate profitability. Strong corporate profits can lead to higher business investment, job creation, and economic growth.

7. **Interest Rates:** Central banks may adjust interest rates based on economic conditions, and stock market performance can be one factor influencing these decisions. For example, a strong stock market might suggest a robust economy, leading to a central bank raising interest rates to prevent overheating.

It is important to note that while the stock market can impact the broader economy, it is also influenced by economic factors. The relationship between the stock market and the economy is complex and multifaceted, and other factors such as geopolitical events, economic policies, and global economic conditions also play crucial roles.

The Indian Stock Market Is Booming

Number of stock market issues in India and money raised through them

Converted from Indian rupees on May 10, 2022
* IPOs, FPOs and OFS (SE)
Source: Prime Database

2. In what ways does the stock market help companies raise capital?

The stock market provides companies with a platform to raise capital through the issuance of stocks. Here are several ways in which the stock market facilitates capital raising for companies:

1. **Initial Public Offering (IPO):** When a private company decides to go public, it conducts an Initial Public Offering (IPO). In an IPO, the company issues share of its stock to the public for the first time. Investors purchase these shares, providing the company with an infusion of capital. The process involves underwriters, who help determine the offering price and sell the shares to the public on behalf of the company.

2. **Subsequent Offerings:** Even after the IPO, companies can raise additional capital by issuing more shares through secondary offerings. This can happen for various reasons, such as funding expansion projects, paying down debt, or financing acquisitions.

3. **Rights Issues:** Companies can issue rights to existing shareholders, allowing them to buy additional shares at a discounted price. This is a way for companies to raise capital while giving current shareholders the opportunity to maintain their proportional ownership.

4. **Private Placements:** While not directly on the stock market, companies can raise capital by selling shares directly to institutional investors or private equity firms. These transactions are negotiated privately and may not involve the public exchange, but they still contribute to a company's capital-raising efforts.

5. **Employee Stock Options and Stock Purchase Plans:** Companies often use stock options and stock purchase plans as part of their employee compensation packages. Employees can purchase company stock at a discounted price or through options. This helps companies attract and retain talent while providing an additional source of capital.

6. **Convertible Securities:** Companies may issue convertible securities, such as convertible bonds or preferred stock. These instruments can be converted into common stock later. This provides a source of financing for the company, and if the securities are converted, it increases the number of outstanding shares.

7. **Venture Capital and Private Equity Exits:** Before going public, many companies receive funding from venture capitalists or private equity firms. These investors often exit their investments by selling shares on the public stock market, providing the company with capital and liquidity.

8. **Market Valuation:** A publicly traded company's stock price is influenced by market perception of its value. If a company is performing well and has strong growth prospects, its stock price may be higher, allowing it to raise more capital when issuing new shares.

By providing a platform for buying and selling shares, the stock market facilitates the flow of capital from investors to companies, enabling businesses to fund operations, expansion, and strategic initiatives. This process is crucial for economic development and the growth of individual companies.

Source: https://cdn.corporatefinanceinstitute.com/assets/primary-markets-1024x609.png
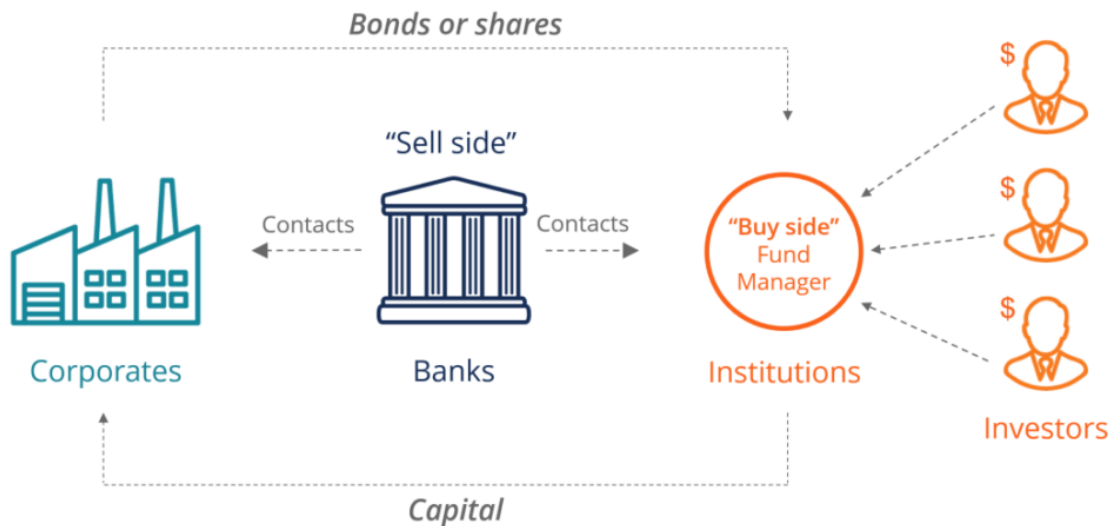
3. What are the Risks Associated with the Stock Market, And How Can they be Addressed?

Investing in the stock market carries various risks, and it is important for investors to be aware of these risks and take steps to manage them. Here are some common risks associated with the stock market and strategies to address them:

1. Market Risk:

Definition: Market risk, also known as systematic risk, is the risk of losses due to overall market fluctuations. Factors such as economic conditions, interest rates, and geopolitical events can impact the entire market.

Addressing Strategy: Diversification is a key strategy for mitigating market risk. By spreading investments across different asset classes, industries, and geographic regions, investors can reduce the impact of adverse market movements on their portfolios.

2. Company-Specific Risk:

Definition: Also known as unsystematic risk, this refers to risks that are specific to a particular company, industry, or sector. Factors like management issues, industry trends, or company-specific events can contribute to this risk.

Addressing Strategy: Diversification can also help manage company-specific risk. Investing in a variety of companies and industries can help offset the impact of poor performance or adverse events affecting a single investment.

3. Liquidity Risk:

Definition: Liquidity risk is the risk that an investor may not be able to buy or sell an investment quickly enough at a desired price. This is especially relevant for investments in less actively traded stocks.

Addressing Strategy: Stick to investments with sufficient liquidity, particularly if you may need to sell assets quickly. Larger, well-established stocks and exchange-traded funds (ETFs) tend to have higher liquidity.

4. Interest Rate Risk:
Definition: Changes in interest rates can impact the value of certain investments, especially bonds. When interest rates increase, bond prices usually decline, and conversely, when interest rates decrease, bond prices tend to rise.

Addressing Strategy: Investors should be aware of the interest rate sensitivity of their investments. For example, shorter-term bonds are generally less affected by interest rate changes than longer-term bonds. Diversification across different asset classes can also help manage interest rate risk.

5. Credit Risk:
Definition: Credit risk is associated with the possibility that a borrower (such as a bond issuer) may default on its obligations, leading to potential losses for investors.

Addressing Strategy: Research and analysis are crucial for assessing the creditworthiness of issuers. Diversification across different types of bonds and issuers can also help mitigate credit risk.

6. Currency Risk:
Definition: Currency risk, or exchange rate risk, arises when investments are denominated in a currency other than the investor's home currency. Changes in exchange rates can affect returns.

Addressing Strategy: Hedging currency risk through financial instruments or selecting investments denominated in the investor's home currency are strategies to manage this risk. However, these strategies also come with their own considerations and costs.

7. Political and Regulatory Risk:
Definition: Political instability, changes in government policies, and regulatory shifts can impact the value of investments, especially in international markets.

Addressing Strategy: Stay informed about political and regulatory developments that may affect your investments. Diversifying across different regions can also help spread political and regulatory risk.

8. Behavioural Risk:
Definition: Behavioural risk refers to the influence of psychological factors on investment decisions. Emotional reactions to market fluctuations can lead to impulsive and suboptimal decisions.

Addressing Strategy: Maintain a disciplined and long-term investment strategy. Periodic review and rebalancing of the portfolio based on investment goals and risk tolerance can help mitigate the impact of emotional decision-making.

9. Systemic Risk:
Definition: Systemic risk refers to the risk of a widespread financial system failure, often triggered by events that affect the entire market.

Addressing Strategy: Diversification alone may not be sufficient to address systemic risk. Monitoring economic indicators, staying informed about global events, and periodically reviewing and adjusting investment strategies are important steps.

10. Cybersecurity Risk:
Definition: With the increasing reliance on technology, the stock market is vulnerable to cybersecurity threats, such as hacking and data breaches, which can impact market integrity and investor confidence.

Addressing Strategy: Robust cybersecurity measures at the individual and institutional levels are essential. Regularly updating security protocols, using secure platforms, and staying informed about cybersecurity best practices can help mitigate this risk.

It is important to note that no investment is entirely risk-free, and the goal is not to eliminate risk but to manage and diversify it based on individual financial goals and risk tolerance. Consulting with financial professionals and staying informed about market conditions are essential components of a well-rounded risk management strategy.

4. What is the process of investing in the stock market, and what do the terms "opening" and "closing" of the stock market in a week mean?

❖ Investing in the stock market involves a systematic process that requires careful consideration and planning. Here is a general guide on how to invest in the stock market:

1. Educate Yourself:
Before immersing yourself in the stock market, invest time in educating yourself. Understand basic financial concepts, investment vehicles, and the risks associated with investing. Acquaint yourself with terms such as stocks, bonds, mutual funds, and exchange-traded funds (ETFs).

2. Define Your Investment Goals and Risk Tolerance:
Clearly define your investment objectives, whether they are long-term wealth accumulation, funding education, or saving for retirement. Assess your risk tolerance, considering factors such as your financial situation, time horizon, and comfort with market volatility.

3. Create a Budget:
Evaluate your financial situation and create a budget. Determine how much money you can allocate to investments without jeopardizing your immediate financial needs or emergency fund. Establishing a budget helps you understand your available investment capital.

4. Build an Emergency Fund:
Prioritize establishing an emergency fund to cover unforeseen expenses before delving into investments. This can help prevent the need to liquidate investments in times of financial stress.

5. Pay Off High-Interest Debt:
If you have high-interest debt, consider paying it off before investing. High-interest debt can erode potential investment returns, and eliminating it can improve your overall financial health.

6. Open an Investment Account:
Choose a brokerage platform or financial institution to open an investment account. Many online brokerages offer user-friendly platforms, research tools, and educational resources. Ensure that the chosen platform aligns with your investment goals and preferences.

7. Understand Different Investment Options:
Familiarize yourself with various investment options, such as individual stocks, bonds, mutual funds, ETFs, and other securities. Each option has its own risk-return profile, so choose investments that align with your goals and risk tolerance.

8. Diversify Your Portfolio:
Diversification entails distributing your investments among various asset classes, industries, and geographic regions to mitigate risk. Avoid putting all your money into a single investment to mitigate the impact of poor performance in one area.

9. Develop an Investment Strategy:
Create a well-thought-out investment strategy that aligns with your goals and risk tolerance. Consider factors like asset allocation, investment horizon, and the level of involvement you want in managing your portfolio.

10. Research and Analyse Investments:
Conduct thorough research on potential investments. Analyse financial statements, company performance, industry trends, and economic factors. Stay informed about news and events that may impact your investments.

11. Start Small and Gradually Increase Exposure:
If you are new to investing, consider starting with a small amount of capital. As you gain experience and confidence, you can gradually increase your exposure to the stock market.

12. Monitor and Rebalance Your Portfolio:
Regularly monitor your investments and assess whether they align with your goals. Periodically rebalance your portfolio by buying or selling assets to maintain the desired asset allocation.

13. Long-Term Perspective:
Approach stock market investing with a long-term perspective. Markets can be volatile in the short term, but historical trends show that, over the long term, well-diversified portfolios tend to grow in value.

14. Stay Informed and Adapt:
Stay informed about market conditions, economic trends, and changes in the investment landscape. Be willing to adapt your investment strategy based on evolving circumstances and your changing financial goals.

15. Seek Professional Advice if Needed:

If you are unsure about certain aspects of investing or need personalized advice, consider consulting with a financial advisor. A professional can help you navigate the complexities of the market and tailor a strategy to your specific needs.

Keep in mind that investing always carries inherent risks, and there are no assured returns. It is important to continually educate yourself, stay disciplined in your approach, and be patient, especially during market fluctuations. If you are unsure about making investment decisions on your own, seeking professional advice can provide valuable guidance.

❖ The opening and closing of the stock market in a week refer to specific times when the stock exchange begins and ends its trading sessions during a regular trading week. In most major stock exchanges around the world, including those in India, the stock market operates on specific business days and follows a daily schedule. Here is what "opening" and "closing" mean in the context of the stock market:

1. Opening of the Stock Market:

- The opening of the stock market marks the beginning of the trading day. It is the time when the exchange officially starts accepting and executing buy and sell orders for stocks and other financial instruments. The opening time is typically accompanied by the ringing of a bell or a similar ceremonial event.For example, in the Indian stock market, the National Stock Exchange of India (NSE) and the Bombay Stock Exchange (BSE) have designated opening times for their trading sessions. In India, the regular trading hours for equity segments generally start at 9:15 AM and continue until 3:30 PM on weekdays (Monday to Friday).

2. Closing of the Stock Market:

The closing of the stock market signals the end of the trading day. It is the point at which the exchange stops accepting new orders, and the final prices of securities are determined. The closing time is also accompanied by specific procedures to calculate closing prices and other market data.

In India, as mentioned earlier, the regular trading hours for equity segments generally end at 3:30 PM. After the closing of the regular session, there may be an additional post-closing or post-market session during which certain trades can be executed, but with different rules and timings.

It is important to note that stock markets operate on specific business days, and weekends (Saturday and Sunday) are typically non-trading days. Additionally, there are public holidays when the stock market is closed. The specific opening and closing times may vary slightly between different exchanges and markets, so it is advisable to refer to the official schedules provided by the respective stock exchanges. Understanding the opening and closing times is essential for investors and traders to plan their trading activities and to be aware of the timeframes during which market movements and price changes occur.

5. What are the types and examples of fund manager in stocks market available in Indian market?

In the Indian stock market, there are various types of fund managers who oversee and manage different types of investment funds. Here are some common types of fund managers in the Indian market, along with examples:

1. Mutual Fund Managers:

Role: Mutual fund managers are responsible for managing the investment portfolios of mutual funds. They make investment decisions based on the fund's objectives and investment mandate.

Examples: Some well-known mutual fund houses in India include HDFC Mutual Fund, ICICI Prudential Mutual Fund, SBI Mutual Fund, and Reliance Mutual Fund. Each of these fund houses has a team of fund managers managing different funds.

2. Portfolio Managers:

Role: Portfolio managers handle discretionary portfolio management services for high-net-worth individuals and institutions. They make investment decisions on behalf of clients, considering the client's risk tolerance and financial goals.

Examples: Portfolio management services are often offered by financial institutions and wealth management firms. Examples include Kotak Portfolio Management, ICICI Securities, and Motilal Oswal Portfolio Management Services.

3. Pension Fund Managers:

Role: Pension fund managers manage the investments of pension funds, including those of the Employees' Provident Fund Organization (EPFO) and the National Pension System (NPS).

Examples: UTI Retirement Solutions, HDFC Pension Management Company, and LIC Pension Fund Limited are examples of pension fund managers in India.

4. Insurance Fund Managers:
Role: Insurance fund managers manage the investment portfolios of insurance companies. They aim to generate returns on the investment side of insurance operations.

Examples: Insurance companies such as LIC (Life Insurance Corporation of India), ICICI Prudential Life Insurance, and SBI Life Insurance have fund management divisions that handle the investment portfolios.

5. Alternative Investment Fund (AIF) Managers:
Role: AIF managers handle alternative investment funds, which include private equity funds, real estate funds, and hedge funds. These funds cater to sophisticated investors seeking higher returns.

Examples: Various asset management companies and financial institutions operate as AIF managers in India. Examples include Kotak Investment Advisors, Blackstone Advisors India Pvt. Ltd., and ICICI Venture.

6. Exchange-Traded Fund (ETF) Managers:
Role: ETF managers create and manage exchange-traded funds, which are investment funds traded on stock exchanges. These funds seek to emulate the performance of a particular index.

Examples: Asset management companies such as SBI ETF, UTI ETF, and Nippon India ETF offer a range of exchange-traded funds in the Indian market.

7. Quantitative Fund Managers:
Role: Quantitative fund managers use quantitative models and algorithms to make investment decisions. These models analyse large datasets and historical patterns to identify potential investment opportunities.

Examples: Quant-based strategies are often implemented by asset management companies and hedge funds. Specific examples in the Indian market may vary, and institutions often use proprietary models.

8. Fund-of-Funds Managers:
Role: Fund-of-funds managers invest in a portfolio of other investment funds rather than individual securities. These funds provide investors with diversification across different funds and asset classes.

Examples: Some mutual fund houses in India offer fund-of-funds, such as HDFC Fund of Funds, ICICI Prudential Fund of Funds, and Reliance Capital Builder Fund.

These are just a few examples, and the Indian financial market has a diverse range of fund managers catering to different investment needs and preferences. Investors should carefully consider their investment objectives and choose fund managers and funds that align with their financial goals and risk tolerance. Additionally, it is important to review the track record and performance of fund managers before making investment decisions.

Recommendations and Suggestions
Recommending that we consider the following ideas to make stock market investment accessible to a broader audience.

- Investing in the stock market is not just for the wealthy; it is not exclusive to those with large incomes or institutions—anyone can start with a small amount of money.

- Before making any investments, take the time to learn how the stock market works. Knowledge is essential for making intelligent investment decisions.

- Share what you learn about investing with friends and family. It is important that everyone is aware of this financial option.

- Utilize easy-to-use platforms and explore different investment methods that suit your preferences. Make investing a regular habit, as consistency can lead to long-term growth.

- Teach kids about money and investing early on; it is a valuable skill for their future.

- Engage in open conversations about money within our communities and seek help when needed. This can further enhance understanding and confidence in stock market investments.

CONCLUSION
In conclusion, this research paper has delved into the multifaceted landscape of stock market investment, aiming to unveil the myriad opportunities and risks inherent in this dynamic financial realm. The opportunities

presented in the stock market are diverse, encompassing the potential for wealth accumulation, portfolio diversification, and participation in the growth of innovative industries. However, these opportunities are counterbalanced by significant risks, including market volatility, economic downturns, and the unpredictability of individual stocks. Investors must navigate this complex terrain with vigilance, leveraging informed decision-making, risk management strategies, and a thorough understanding of market dynamics.

In essence, while the stock market offers a platform for wealth creation, it demands a judicious balance between risk and reward. Successful investors are those who not only capitalize on opportunities but also navigate the risks prudently. This research contributes to the understanding of stock market dynamics, providing insights that can guide investors in making informed decisions. As the financial landscape continues to evolve, the lessons gleaned from this analysis will be invaluable for individuals seeking to harness the potential of stock market investment while mitigating associated risks.

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A STUDY OF INVESTMENT PORTFOLIOS OF SENIOR CITIZENS: AN EMPIRICAL STUDY MADE OVER THE SENIOR CITIZENS IN MUMBAI AND NAVI-MUMBAI REGION

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ABSTRACT

In today's ever-changing financial landscape, securing your retirement and ensuring financial stability in your senior years is of foremost importance. This journey requires a thoughtful and well-structured investment portfolio tailored to the unique needs and circumstances of senior citizens. These portfolios should provide a balance between income generation, growth potential and risk management, taking into account reduced income capacity and the increased need for financial stability in retirement. Senior citizens in all categories either pensioners or non-pensioners are playing an important role in the capital formation and economic and industrial development of our country. Therefore, the study of investment portfolios of senior citizens holds eminent relevance in this economy. This research paper will focus on senior citizens investment portfolios in metro cities like Mumbai and Navi-Mumbai region. By this study, an attempt has been made to provide awareness among senior citizens about various investment avenues available to them and to study Preferred Investment Portfolio by them.

Keywords: Investment portfolio, Senior citizens, Awareness.

INTRODUCTION

'Retirement', a word that commonly plays on the minds of every individual at the back of their mind. The busy life schedule and short-term goals of this long life keeps people from deciding the most important investment decisions of this phase of their life. India is witnessing a demographic shift with an increasing proportion of elderly citizens with approximately 10.5% (as of 2022) of the country's population above the age of 60 years. Mumbai, being one of the most populous cities, is no exception.

Investment is a pursuit that is engaged in by people who have savings. It is defined as "Commitment of funds made in the expectation of some positive rate of return". It has generally been observed that planning for savings and investments for retirement are usually one of the later priorities for all household. Individuals start contemplating about long term savings and investment plans in their late 30's which are generally targeted towards children education plans, etc.

Senior citizens often rely on their investments to meet their daily expenses, medical bills, and other financial needs. Analyzing the investment choices of senior citizens can shed light on how well they are prepared for retirement. It can help identify gaps in their retirement planning and inform strategies to improve their financial well-being during their retirement years. The retirement plans must meet the growing rate of inflation.

Investment patterns are different for all. Some prefer to increase their wealth while others prefer money reserved for future purposes. Retirement usually leads to a loss of income, and the pension received by the elderly is usually not enough to cover the ever-increasing living costs. So, for fulfilling this gap senior citizens should continue to look for different avenues of income and for this they have to plan for right place for deployment of their retirement funds for fulfilling their needs.

LITERATURE REVIEW:

Sr no.	Date of publication	Source	Author's name	Publisher's name	Topic	Review
1	May 2022	https://ijsrem.com/download/a-study-of-investment-portfolio-of-senior-citizens-in-greater-noida/	Nidhi Singh and Viveka Rajput	*International Journal of Scientific Research in Engineering and Management (IJSREM)*	A Study of Investment Portfolio of Senior Citizens in Greater Noida	Every attribute of investor like his age stage, earnings stage, his expectation stage has effect on their portfolio signal. To earn precise return with less capital issue, an investor has to be lively whilst designing his portfolio.
2	July 2020	WELCOM	Kunjum-	*International*	Investment	Investment should be

		E TO IJCR | International Journal of Current Research (journalcra.com)	men T-Tharian	*Journal of Current Research*	patterns of senior citizens in India – a case study of Kottayam district, Kerala	made based on the needs, taking into consideration liquidity, profitability, stability and security. People should be educated that the old age has to pass through and that saving for old age could be a painless process if started early in life.
3	September 2017	https://www.welingkar.org/sites/default/files/pdf/we-research-aweshkar-research-journal/aWEshkar_September_2017.pdf#page=106	Sneha Pungalia, Dr. Vinay Goyal and Dr. Manish Kant Arya	aWEshkar A Peer Reviewed Research Journal	A Study on Preferred Investment Avenue Among Senior Citizens with Reference to Indore City, India	Financial institutions should have one help desk for senior citizens which can provide financial literacy to senior citizens and help them in identifying and selecting the best portfolio for their regular income.
4	2022	https://ijfans.org/uploads/paper/3f6586c3f2109be0bab26259cac602ec.pdf	Dr. Anjali Alekar	*IJFANS INTERNATIONAL JOURNAL OF FOOD AND NUTRITIONAL SCIENCES*	Study of Investment Pattern among Senior Citizens in India: A Case Study of Mumbai Suburbs	Findings of the paper indicates that gender and education play a crucial role in investment decisions. To mitigate their fear of losing money and life savings, bridging the knowledge gap and introducing measures that enhance safety and liquidity is essential.
5	July 2018	https://www.ipsacademy.org/unnayan/jp/9.pdf	**Neha Bhargava and Kiran Hasija**	*UNNAYAN: International Bulletin of Management and Economics*	A Study of Impact of Gender and Age on Investment Behaviour	Age is considered to be significant as with growing age, people gain maturity in making investment decisions and become more aware about different investment schemes in the market. They plan different investments differently at different stages of life.

OBJECTIVES:

The Main Objectives of the Study Are:
- To understand the various investment portfolios available for senior citizens to make an investment.
- To study the awareness and adoption level of senior citizens about various investment avenues.
- To analyze the factors considered for making an investment by senior citizens in Mumbai and Navi-Mumbai region.

SCOPE:

This study focuses on the investment portfolios and their awareness and adoption level by senior citizens. This study is confined to senior citizens above the age of 60 years in Mumbai and Navi-Mumbai region.

RESEARCH METHODOLOGY:

1. RESEARCH DESIGN

This study consists of both primary and secondary data. The primary data have been collected from the senior citizens by administering a well-structured close-ended questionnaire to study the Senior citizens awareness and preferred investment portfolio. The secondary data have been collected from various books, journals and from the internet.

2. DATA SOURCE AND COLLECTION PROCEDURE

The present study has made use of both primary as well as secondary data.

- Primary Data: Primary Information were accumulated involving survey as a device for information assortment. Online and offline data collection method was used, that is Google form as well as physical visit was conducted to collect the primary data.

- Secondary Data: Secondary information is collected from various books, research articles, and journals.

3. SAMPLING DESIGN

For purpose of present study, total Sample size of 100 senior citizens were chosen from Mumbai and Navi-Mumbai region. There were 11 questions in the questionnaire. Convenient sampling method was followed while selecting 100 individuals.

RESEARCH ANALYSIS:

The secondary data collected from various books, research articles, and journals, as well as the primary data collected via questionnaire, have been thoroughly analyzed.

A) Secondary data analysis and findings

Best Senior Citizens Investment Plans with High Returns 2023

Table No 1.

Investment Option	Interest Rates	Minimum Investment Amount
Senior Citizens Savings Scheme (SCSS)	8.20% p.a.	Rs. 1,000
Post Office Monthly Income Scheme (POMIS)	7.40% p.a.	Min Rs. 1,500
Senior Citizen FD	8.20% p.a.	Varies between banks
Tax-Free Bond	5.5%-6.5% p.a.	NA
Mutual Funds	12.00% to 15.00% p.a.	Rs.100

Source: https://scripbox.com/mf/best-investment-for-senior-citizens-
india/#:~:text=You%20can%20invest%20in%20Senior,income%20during%20your%20retirement%20years.

The above table shows the best senior citizens investment plans with their respective interest rates and minimum investment amount.

INVESTMENT PORTFOLIOS FOR SENIOR CITIZENS:

1. **Senior Citizens Savings Scheme (SCSS):** SCSS is a central government-backed savings scheme. It is a risk free, full debt instrument. Valid for people over 60 years of age, it gives the security of assured income for the entire tenure of investment. Senior citizens living in India can individually or jointly invest a fixed amount in the scheme and receive regular income with tax benefits. They can open an account at a post office or an authorized bank.

2. **Rent from Real Estate:** Real estate is a tricky field of investment. The returns can be either consistent, slow or there may not be any fruitful return for a while. Senior citizens can generate income by renting property. There are risks involved in this option like not getting tenants or right tenants or fall in property rates.

3. **Post Office Monthly Income Scheme (POMIS):** India Post or the Department of Post (DoP) offers Post Office Monthly Income Scheme (POMIS). The Government of India backs this savings scheme. POMIS is a low-risk investment option and offers regular monthly income to the depositors in interest payments.

4. **Bank and Company Fixed Deposits:** Bank fixed deposits are the most preferred investment options as they offer a fixed return. Because the returns in the form of investments are assured, these are regarded as low-risk investments. Senior citizens get an extra 0.25-0.5 per cent per annum, depending on the bank. Fixed deposit issues from various companies offer higher interest rates than bank fixed deposits. However, such issues are limited and investors should note that they bear credit risk.

5. **Mutual Funds:** Mutual funds pool the funds of several investors to invest in a diversified portfolio of stocks, bonds or other assets. They provide flexibility, expert management, and immediate diversification. Your tolerance for risk declines after retirement, making capital safety the most crucial factor. Investing primarily in equity-oriented mutual fund schemes may expose you to a level of volatility that may not be comfortable, especially in the short term.

6. **Stocks:** Stocks, or equities, represent ownership in a company. Seniors might potentially earn dividends and contribute to the expansion of businesses by investing in stocks. But because of the volatility of the market, equities also come with greater risk.

7. **Bonds:** Bonds are debt instruments issued by governments, municipalities, and corporations. When they mature, the principal amount is returned, together with fixed interest payments. Bonds are generally considered less risky than stocks and offer a steady income stream.

8. Pradhan Mantri Vaya Vandana Yojana (PMVVY): In the year 2017, the Pradhan Mantri Vaya Vandana Yojana was introduced for all senior citizens. Pradhan Mantri Vaya Vandana Yojana, Operated and managed by LIC (Life Insurance Corporation), is a retirement-cum-pension scheme. It is an instant annuity plan that offers a fixed sum regularly to you as an investor, once you invest a lump sum amount in this scheme.

9. Reverse Mortgage: This is a product for those who have a lot of real estate but not much free cash. In this, the retired person keeps a house as collateral with the bank. In return, the bank pays monthly fees based on the value of the house. The borrower can opt for monthly, quarterly, annual or lump sum payments. As reverse mortgage is a loan, the interest rate is either fixed or floating.

10. **Sovereign Gold Bond (SGB):** Government securities known as SGBs are valued in gold grams. They serve as an alternative to actually possessing gold. The issue price of the bonds must be paid in cash by investors, and at maturity, the bonds will be redeemed for cash. The Reserve Bank is the issuer of the Bond on behalf of the Indian government. **S**enior citizens, dependent on investment income, have much on the line. Although SGBs have generated significant returns in the past, it's essential to weigh factors such as the lock-in period, potential sluggish growth, and the prospect of lower returns before opting to invest in them.

B) Primary data analysis and findings

Method of Data Collection: Well-structured close-ended questionnaire
Sampling Method: Convenient Sampling method was used. Online and offline data collection method was used that is Google form as well as physical visit was conducted to collect the primary data.

Sampling Strength: There were 11 questions in the questionnaire, and the data was collected from Mumbai and Navi Mumbai. There were 100 people who responded.
Data Processing: The researcher attempted to collect the data to infer the data from the representative research.

DATA ANALYSIS

A) Demographic Profile of the Respondents
The demographic profile of respondents- gender, geographical distribution, age, and previous occupation is presented into below tables.
Research Related Questions:

Research Question 1: What is your gender?

Table No. 2 shows the gender wise classification of the respondents.

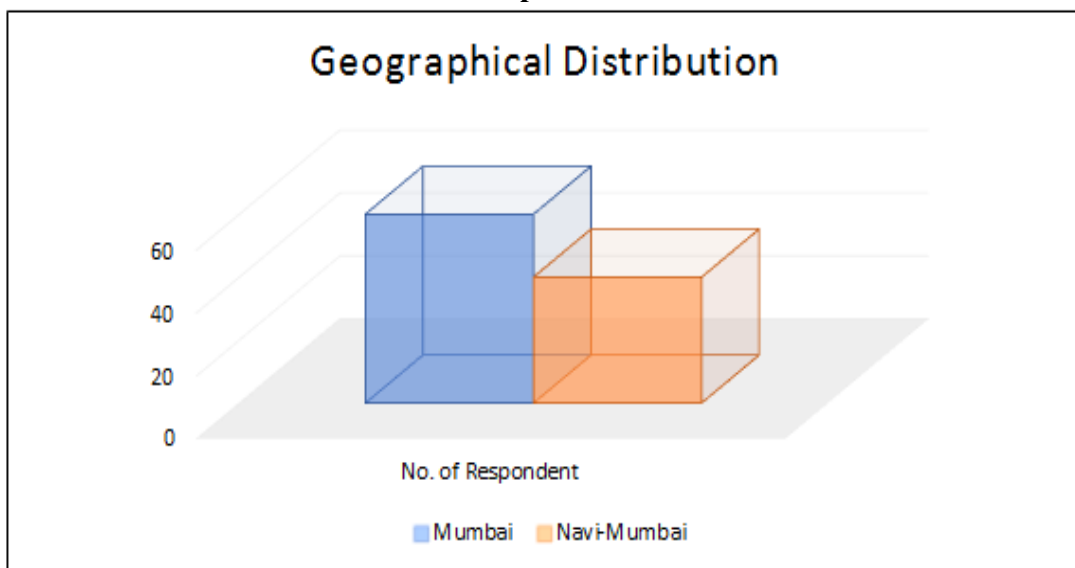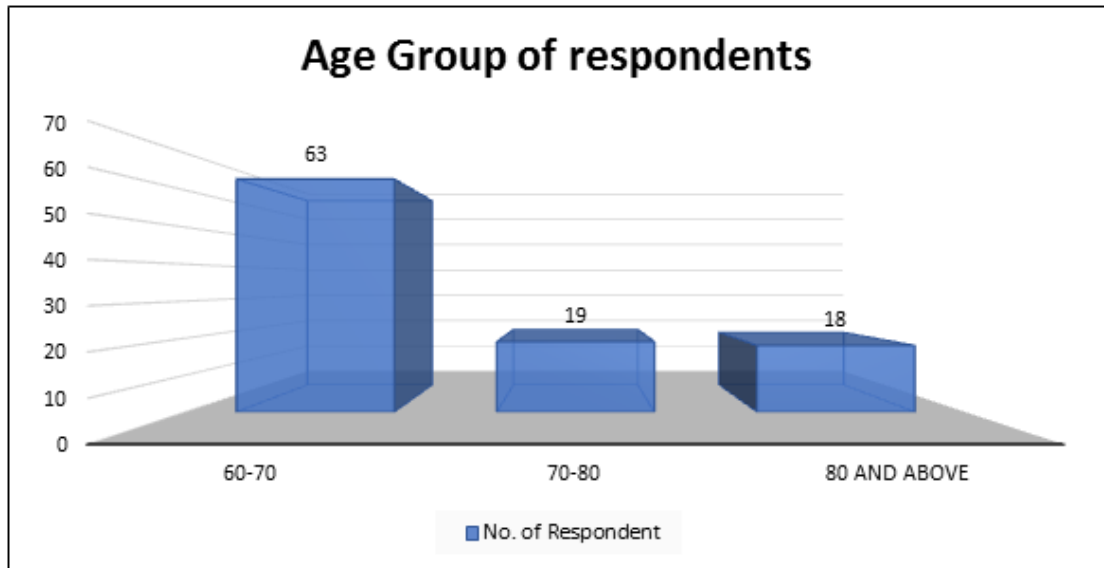| SR. NO.	Gender of respondent	No. of Respondent
1.	Male	76
2.	Female	24
Total		100

Graph No. 1
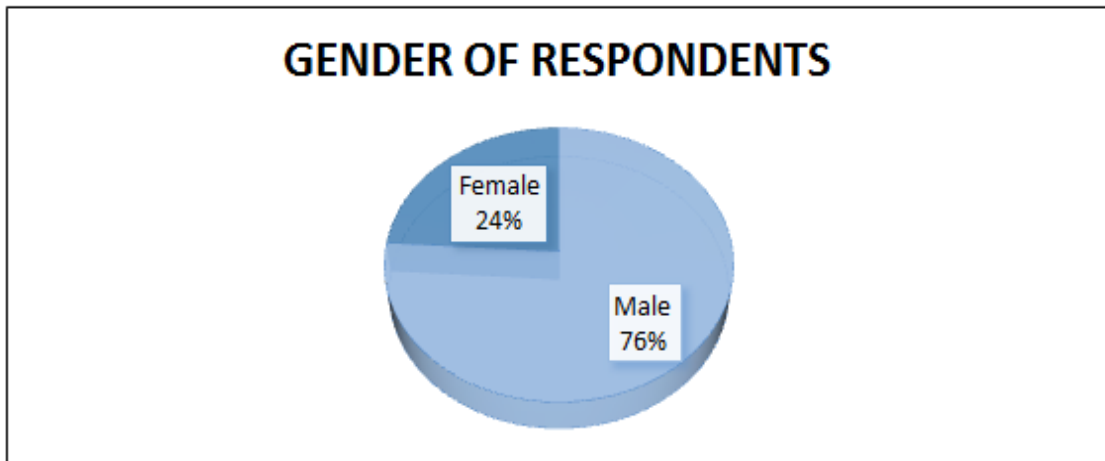
Research Interpretation

The above table and graph show the gender wise classification of the respondents. 76% are male respondents and 24% are female respondents.

Research Question 2: What is your geographical area?

Table No. 3 shows the geographical distribution of the respondents

SR. NO.	Geographical distribution	No. of Respondent
1.	Mumbai	60
2.	Navi-Mumbai	40
	Total	100

Graph No. 2

Research Interpretation

The above table and graph show the geographical distribution of the respondents.

Research Question 3: What is your age group?

Table No.4 shows the age group of the respondents.

SR. NO.	Age of the respondent	No. of Respondent
1.	60-70	63
2.	70-80	19
3.	80 and above	18
	Total	100

Graph No. 3:

Research Interpretation

The above table and graph show the age group of the respondents with 63% respondent among the age group of 60-70 years.

Research Question 4: What was your previous occupation?

Table No.5 below shows the previous occupation of the respondents.

SR. NO.	Previous Occupation of the respondent	No. of Respondent
1.	Government Job	17
2.	Private sector employee	50
3.	Owned Business	3
4.	Professional	12
5.	House-wife/ House-Husband	18
	Total	100

Graph No. 4
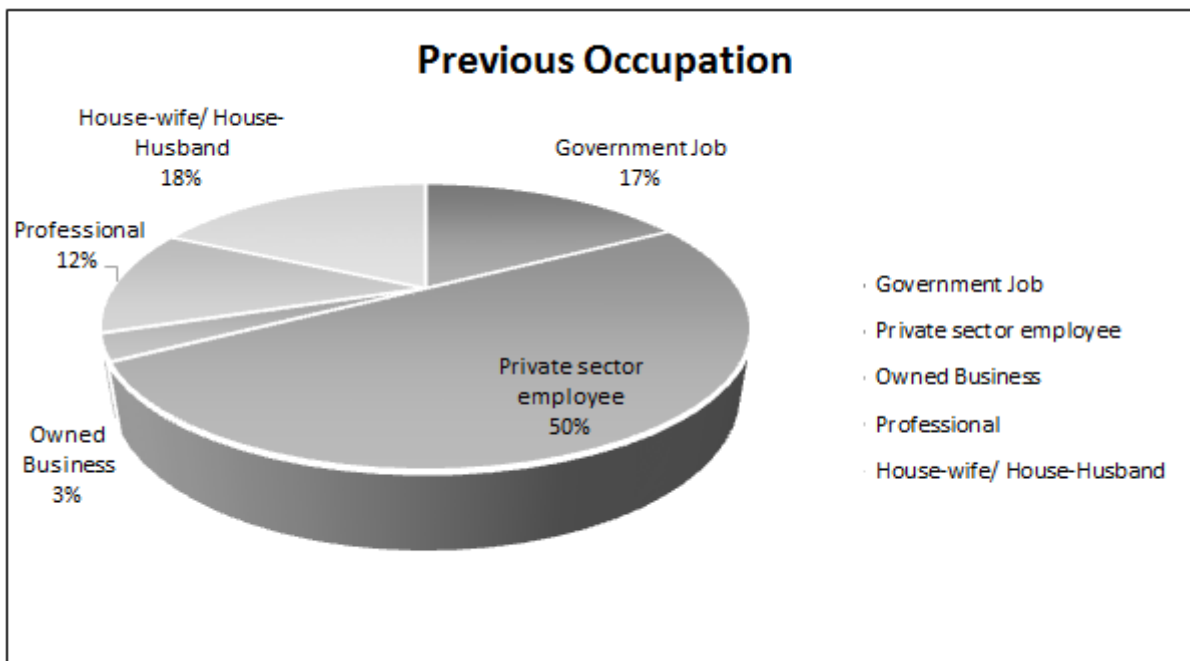
Research Interpretation 1:

The above table and graph show the previous occupation of the respondents with majority of them being previously employed in private sector.

Overall Interpretation based on demographic details of the senior citizens of Mumbai and Navi-Mumbai region.

Among the respondents, 76% are male and 24% female.

60% respondent are from Mumbai and 40% from Navi-Mumbai region.

63% respondent are among the age group of 60-70 years.

50% respondent were previously employed in private sector and 17% in government job.

B) INVESTMENT PORTFOLIOS

Research Question 5: What are your current Investment Portfolios?

Table No.6 below shows the Investment Portfolios of the senior citizens of Mumbai and Navi-Mumbai region in which they have invested their savings.

SR. NO.	Investment Portfolios of the respondent	No. of Respondent
1.	Govt. Scheme	12
2.	Real Estate	13
3.	Bank Fixed Deposits	34
4.	Mutual Funds	9
5.	Stocks and Bonds	11
6.	Gold	21
	Total	100

Graph No. 5
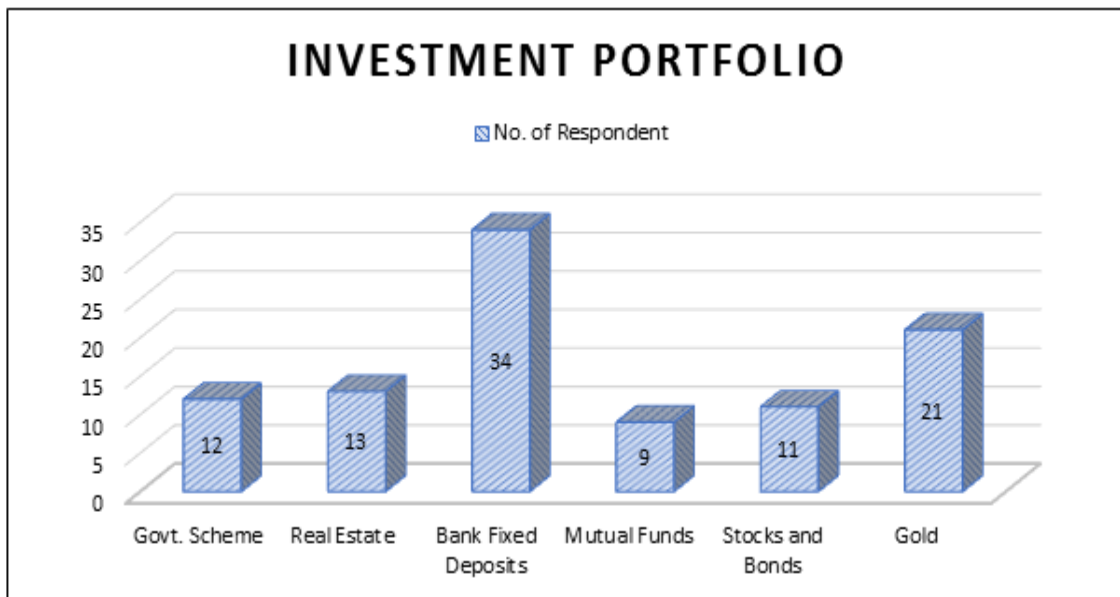
Research Interpretation

The above table and graph show the various investment portfolios in which the senior citizens have invested their savings. Most of them has opted Bank Fixed Deposits as an investment portfolio followed by gold, while 9% of them use mutual funds.

Research Question 6: What do you mostly spend your money on?

Table No.7 below shows the spending pattern of the senior citizens of Mumbai and Navi-Mumbai region.

SR. NO.	Spending Pattern	No. of Respondent
1.	Basic Needs	61
2.	Standard of living	14
3.	Medical Expenses	19
4.	Luxury	6
	Total	100

Graph No. 6
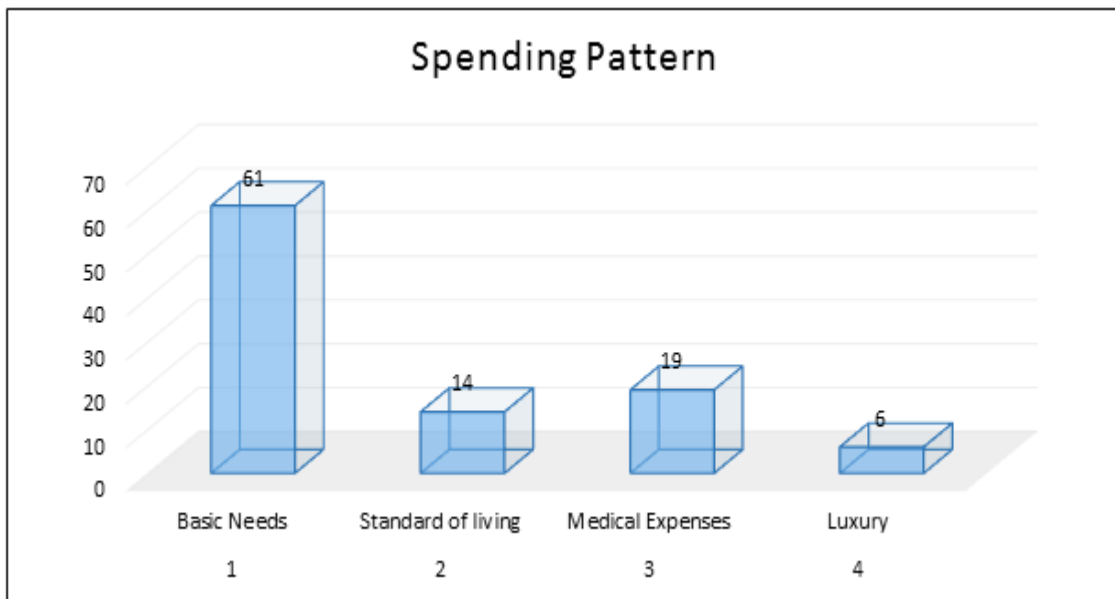
Research Interpretation
The above table and graph represent the spending pattern of senior citizens. Majority of the respondents spend their money for meeting basic needs, some spend it for a better standard of living, medical expenses and some for living a luxury life.

Research Question 7: What were your basic objectives behind your current investment?

Table No.8 below shows the basic objectives of the senior citizens of Mumbai and Navi-Mumbai region behind their current investment.

SR. NO.	Objectives	No. of Respondent
1.	Future Needs	61
2.	Unforeseen events	29
3.	Creation of property	10
	Total	100

Graph No. 7
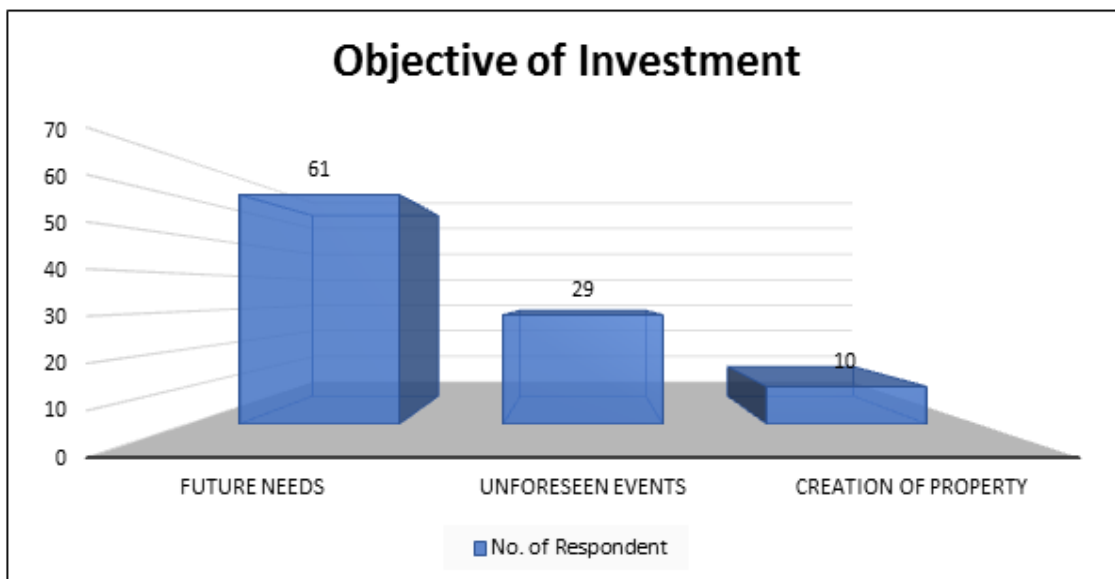
Research Interpretation
The above table and graph represent the objective behind the investment of senior citizens. Most of the respondents has invested their money for meeting future needs. There are some who use it for meeting unforeseen events and some for creation of properties.

Research Question 8: What are your expectations from your investment portfolios?

Table No.9 below shows the expectations of the senior citizens of Mumbai and Navi-Mumbai region from their current investment portfolios.

SR. NO.	Expectation	No. of Respondent
1.	Safety	23
2.	High Return	7
3.	Liquidity	8
4.	All of them	62
	Total	100

Graph No. 8
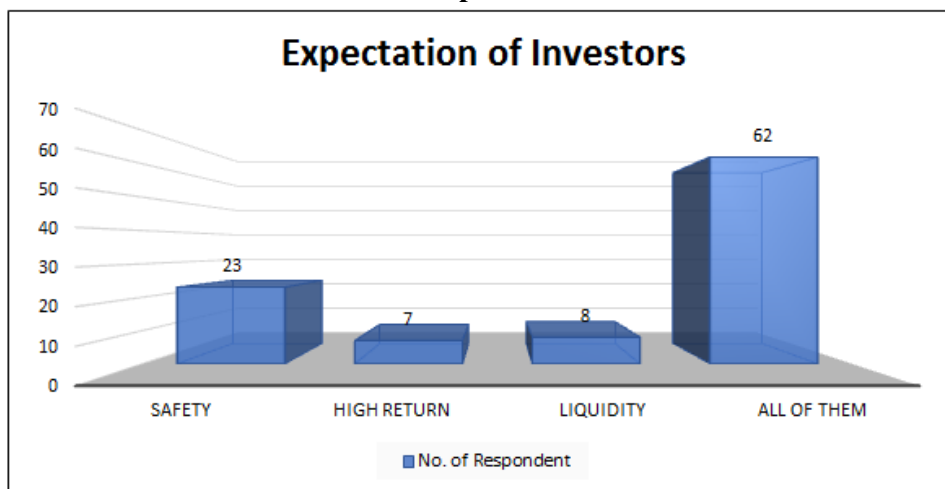
Research Interpretation

The above table and graph represent the primary expectations of senior citizens. Most of the respondents aim for all the three factors such as safety, high return and liquidity.

Research Question 9: What are the various problems that you face from your portfolios?

Table No.10 below shows the problems faced by the senior citizens of Mumbai and Navi-Mumbai region from their current investment.

SR. NO.	Problems of investors	No. of Respondent
1.	Low return	20
2.	Irregular return	23
3.	High risk	34
4.	Lack of liquidity	17
5.	Not flexible	6
	Total	100

Graph No. 9
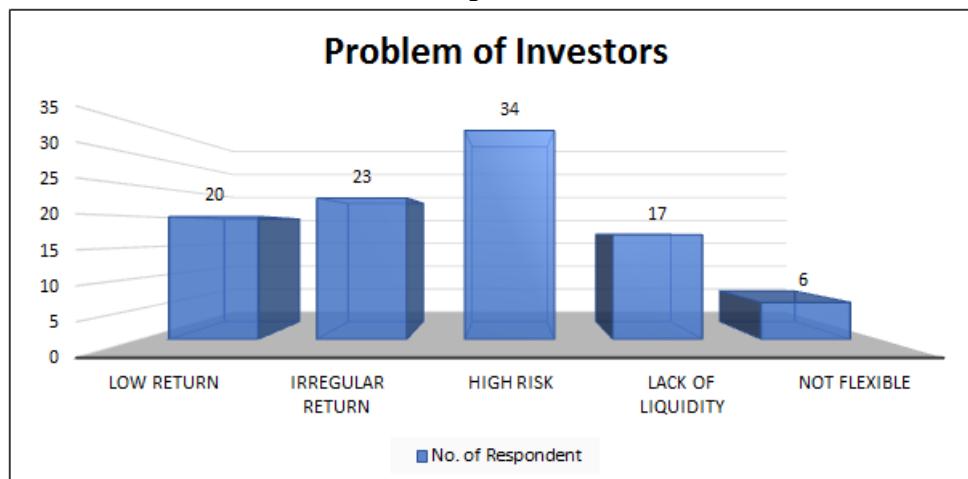
Research Interpretation

The above table and graph represent the problems of investors. It is clear that High Risk and irregular return are the major problems faced by majority of the respondents. Low return, Lack of liquidity are some other problems of investors.

Research Question 10: What is your source of information about various investment portfolios?

Table No.11 below shows the sources of information of the senior citizens of Mumbai and Navi-Mumbai region about various investment portfolios.

SR. NO.	Source of information	No. of Respondent
1.	Media	9
2.	Newspaper	29
3.	Advertisement	22
4.	Co's sales force	10
5.	Friends and Family	30
	Total	100

Graph No. 10
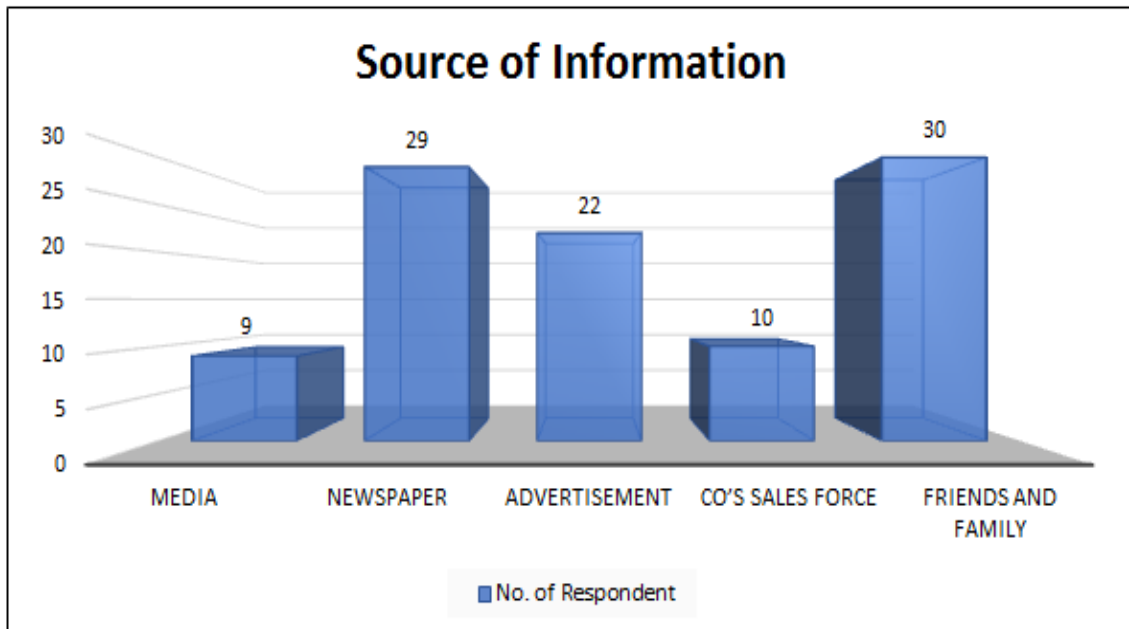
Research Interpretation

The source of information for majority of the respondents is Friends and family, Advertisements followed by Newspapers, Company's sales force and Media.

Research Question 11: How much satisfied are you from your investment portfolios?

Table No.12 below shows the satisfaction level of the senior citizens of Mumbai and Navi-Mumbai region from their current investment.

SR. NO.	Satisfaction of Investors	No. of Respondent
1.	Fully satisfied	21
2.	Partially satisfied	50
3.	Not satisfied	8
4.	Can't say	21
	Total	100

Graph No. 11
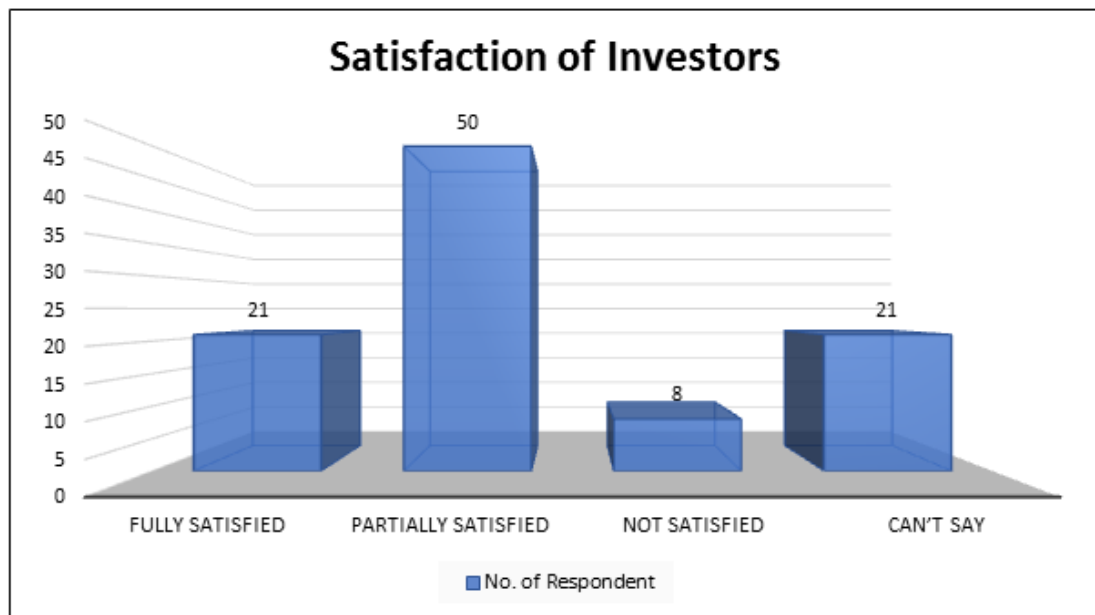
Research Interpretation

Majority of the respondents are partially satisfied with the interest or return on investment. There are some who are fully satisfied and some who are not at all satisfied. There is a category of respondents who can't say about their satisfaction level.

RESEARCH FINDINGS:

When people enter into the category of senior citizens the worry of financial need is high among them and they start planning for the same. It has been observed that senior citizens take more matured decisions and invests in property, pension schemes, mutual funds, gold, FD's etc.

At this stage, they are not willing to take any additional risk to earn an extra rupee. However, some investors have a high-risk tolerance even at the age of 60 and above.

- As per the finding, Senior citizens preferred portfolio is banks fixed deposit and gold followed by real estate, government scheme, stocks and bonds and mutual funds.

- Investors major part of spending is constituted by Basic needs followed by medical

- Expenses, standard of living and then luxury.

- According to senior citizens, major objective of their investment is to save for future needs and unforeseen events.

- The primary expectation of majority of investors by their investment is safety, high return and liquidity.

- According to the research, major problem faced by senior citizens is the problem of high risk, followed by low or irregular return and lack of flexibility.

- Friends and Family constitutes major source of information for the senior citizens, followed by newspaper, advertisements, company's sales force and then by media. It can be concluded that 50% of the investors are satisfied by their investment portfolios.

- The investor who bears excessive risk might be getting excessive returns. The investor who is having ideal portfolio might be taking greatest returns with minimum risk.

RECOMMENDATIONS:

Senior citizens are partially aware about various investment avenues. For senior citizens, the best investment avenue will help earn a regular source of income and aid in gaining from the capital growth.

- The dilemma faced by the senior citizens is about the reconciliation of profitability, liquidity and risk of investment. The senior citizens must collect the required information before taking investment decisions. Preparation for retirement should be made well in advance, so as to plan how to utilize the retirement benefits and other resources for safe future. To choose the right investment according to needs, the senior

citizens should seek the support of the financial planners who have exhaustive knowledge about different avenues of investment. People should be educated that the old age has to pass through and that saving for old age could be a painless process if started early in life

- Senior citizens should be provided proper information regarding different investment option by financial institutions. Financial institutions should have one help desk for senior citizens which can provide financial literacy to senior citizens and help them in identifying and selecting the best portfolio for their regular income.

- The government of India should look after the needs of senior citizens by providing them best suitable investment option with inflation adjusted return so that they can survive easily.

CONCLUSION

Senior citizens require adequate information for making apt investment decision. Preparation for retirement and old age should be planned in advance. Investment should be made based on the needs, taking into consideration liquidity, profitability, stability and security. These elements are crucial aspect with regard to investments of senior citizens. Investment awareness and information regarding various investment avenues is necessary to select right investment decision.

The study on preferred investment portfolio among senior citizens has been undertaken with the objective to analyze the awareness and adoption of different investment portfolios for people in Mumbai and Navi-Mumbai region. Analysis of the study was undertaken with the help of a survey conducted online as well as offline. After analysis and interpretation of data it is concluded that in Mumbai and Navi-Mumbai region respondents are more concerned about safety and security and regular income from their investment for fulfilling their need. They prefer bank fixed deposit, gold, real estate, government scheme, stocks and bonds and mutual funds.

Most of the senior citizens are partially satisfied with the interest or return on investment that they are getting. Government of India and financial institutions of India have to pay attention to this category of population as they are also very important part of our society and increasing in numbers year by year.

Portfolio management is a dynamic and flexible concept which involves regular and systematic analysis. It can be concluded that the investors should be updated with latest information on the market trends and on the respective company profile in which they have invested. The best investment option for senior citizens depends on factors such as risk tolerance, income needs, time horizon, and financial goals. A well-diversified portfolio that includes a mix of stocks, bonds, gold and other assets is often recommended.

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A STUDY ON THE PORTRAYAL OF INDIAN FAMILIES AMONG MILLENNIALS IN INDIAN OTT WEB- SERIES

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ABSTRACT

This study investigates the portrayal of Indian families in Over-The-Top (OTT) web-series over the past five years and its impact on audience perceptions. With India experiencing a digital renaissance and a surge in OTT content consumption, the research explores how these narratives shape attitudes towards family structures, dynamics, and societal norms.

The study employs a descriptive research method, utilizing a questionnaire-based approach. In the conducted research, the sample selection methodology employed was judgement sampling, involving a population of approximately 50 millennials who were contacted via email. In light of practical constraints associated with email outreach and accessibility, the researcher opted for judgment sampling, selecting participants based on factors such as convenience and availability. This approach may introduce a level of bias into the sample selection process. Findings from the analysis, including Chi-Square tests and ANOVA, provide insights into the relationship between family structures depicted in OTT content and audience perceptions.

The study utilizes cultivation theory to assess OTT web-series' long-term impact on Indian family life perceptions. Employing uses and gratifications theory, it explores audience motivations for engaging with family-themed OTT content. Providing valuable insights for content creators, the research has practical implications for refining storytelling strategies, acknowledging potential sample bias. Nevertheless, it contributes to the evolving discourse on family representations, offering a nuanced understanding of the interplay between OTT content, audience perception, and cultural attitudes.

While the study identifies a significant association between the type of family structures watched and perceptions of realism, it rejects the hypothesis that OTT web-series significantly influence audience perceptions of family dynamics leaving scope for future research to explore the nuanced factors contributing to the observed association. This rejection invites further investigation into the multifaceted influences on audience perceptions of family dynamics in the context of OTT web-series.

INTRODUCTION

In recent years, India has witnessed a remarkable surge in the consumption of Over-The-Top (OTT) content, catapulting the nation into a digital renaissance that has transformed the entertainment landscape. The statistics are striking: an average of 70 minutes per day is spent on video streaming platforms, underscoring the profound shift in how individuals engage with entertainment (Times of India, 2023, June 20, 2:47 pm). At the core of this transformative wave are over 45 million OTT subscribers in India, a number expected to burgeon to 50 million by the end of 2023. (Times of India, 2023, February 14, 4.54 pm).

In the dynamic landscape of entertainment, the surge in Over-The-Top (OTT) content viewership has profoundly sculpted the preferences of Indian audiences, revolutionizing the way they consume content. Moreover, as OTT platforms gain traction among subscribers, there is a noticeable trend towards incorporating relatable portrayals of Indian families in dramas, adding a unique flavour that makes the content more watchable

The PwC Global Entertainment & Media Outlook for 2022-2026 predicts that the Indian OTT market is anticipated to surpass the revenue of the Print and Films segment by fiscal year 2025 (PwC, 2022). Despite being in a nascent stage, OTT platforms and their content have gained remarkable acceptance among the Indian audience. Factors such as affordability or free access, ease of accessibility through connected devices like smart TVs, PCs, tablets, smartphones linked through the internet, and the availability of original content on demand, especially in regional languages, are identified as key contributors to the success of OTT in India (PwC, 2022).

However- what to watch also remains a cause of discussion among the stakeholders. The decision-making process is influenced by factors such as family type (step or biological), environment, and opinion leaders (Singh & Jena, 2023), as discussed in a study on holiday planning in Indian families conducted by Rashmi Singh and Lalatendu Kesari Jena from the School of Commerce and School of Human Resource Management at XIM University in Bhubaneswar, India.

Crucially, the nuanced representation of Indian families in OTT web-series has emerged as a focal point, warranting dedicated exploration. As the OTT landscape evolves, the narrative unfolds not only in the language of metropolitan centres but also resonates in regional languages, reflecting the rich tapestry of India's cultural diversity. The surge in subscribers is not a mere consequence of global content dissemination but an acknowledgment of the platform's commitment to displaying regional nuances and micro-genres that resonate with specific cultural contexts.

This research explores the intricate tapestry of how Indian families have been represented in OTT web-series over the past five years, delving into the dynamics of storytelling, character portrayal, and the societal reflections encapsulated in these digital narratives. As the country propels itself into the future of digital entertainment, this investigation seeks to illuminate the evolving contours of family representation within the multifaceted realm of OTT content, unravelling the threads that weave the stories of contemporary Indian families on screen.

REVIEW OF LITERATURE

What Defines an Indian Family
According to a study by Singh and Jena (2023) from the School of Commerce and School of Human Resource Management at XIM University in Bhubaneswar, India, "A family system is a model that defines both the mutuality and complexity of family members. Mutuality means each family member influences others and gets influenced by the different components of the family subsystems. The complexity of the family system is because of the different dyads and subsystems within the family."

The complexity in the family system arises when we move deeper into the family subsystems. The family subsystems include the husband–wife (Spousal) dyad, mother–daughter/son dyad, father–daughter/son dyad and siblings' dyad. Different families in India have different approaches, such as a "high degree of nurturance" or "high degree of restrictiveness"(Singh & Jena, 2023). According to Nagamallika (2018), the shifting dynamics in Indian society have led to a transformation in family structures, whether they be joint or nuclear, while families continue to serve as a robust social foundation.

Half of India stays in nuclear families- a unit comprising parents and their dependent children (Livemint, 2023, July 28, 12.34 am). Globalization has intensified change in social and family structures in India and "there are many factors for the disintegration of the joint family like economic, educational, legal, urbanization which contributes in separating the children from the elders"(Bhat & Scholar, 2018).

Indian Culture and Family
Indian culture is a rich tapestry woven with vibrant traditions, diverse languages, and a harmonious blend of ancient customs and modern influences. Rooted in a profound respect for family values, the essence of Indian culture lies in the close-knit familial bonds that serve as the cornerstone of societal structure. This emphasis on family fosters a sense of unity, responsibility, and shared traditions, making it an integral and cherished aspect of India's cultural identity.

The researcher has observed a noticeable increase in the prevalence of OTT content that places family and familial relations, along with the interpersonal impact on individuals within a family, at its core. Consequently, the the study aims to discern the factors influencing viewers' choices when selecting specific OTT content and to explore the perceived evolution of these considerations over the years.

The family forms one of the most popular social institutions in television serials to depict the social 'reality'(Nagamallika, 2018). The researcher seeks to address the question of whether television serials shape the perception of 'reality' while embodying the characteristics of a theatrical drama in their narrative structures. A decade ago, during the 2000s, narratives in television serials commonly revolved around intense conflicts between the 'mother-in-law' or 'sister-in-law,' portrayed as embodiments of 'evil,' striving to exert control and seize power. The plots typically advanced through the perpetual struggle between the 'good' and 'evil,' especially prevalent in Indian television serials known for their melodramatic essence. However, in recent years, there has been a noticeable shift in the portrayal of 'good' and 'evil' in Indian television (Nagamallika, 2018). The research aims to delve into this transitional landscape by studying how contemporary web-series on OTT platforms depict and navigate these traditional character dynamics, exploring the nuanced evolution of storytelling in the digital age.

Surge in OTT Viewership Post Pandemic
A study by Tiwari (2019) found that web series had a positive impact on the respondents' social behavior, leading to increased communication with friends and family, and the creation of new relationships.

With people seeking diverse and accessible content from the comfort of their homes, the appeal of OTT platforms soared, marking a substantial increase in their viewership.

The restrictions imposed in response to the Covid-19 pandemic brought about substantial shifts in media and entertainment consumption patterns. As lockdowns confined individuals from venturing out for leisure or work, social interactions gradually transitioned to online platforms. Web-based social networking offered the opportunity to stay connected with family, friends, colleagues, neighbors, and others. Due to the closure of external entertainment venues by government mandate, home-based entertainment modes experienced consistent growth and development (Menon, 2020).

Changing Narrative in OTT Web Series
In a content-saturated digital marketplace, brands are constantly seek ways to stand out. Well executed long-form content is an excellent way to build your brand's reputation for in-depth research, contextual expertise, and a mastery of your market niche (Teamthunderfoot, 2017).

Content plays an immense role in continuous watching behaviour. Video streaming platforms and creators of web shows are contemplating the prospect of targeting family audiences for some time, opting to avoid controversial or bold content and instead choosing a safer approach (Jha, 2021).

The researcher plans to identify the factors that influence the choice of content for the viewers and how they interpret different socio-economic, demographic and cultural elements shown in the series versus their idea of a family. According to Diwan (2016),

According to Diwan (2016), "Viewers use comments to make their own logic about why their desires, demands, complaints, and motivations matter visible to themselves. Watching the text is only part of this communication process. What completes the loop is seeing oneself as a viewer" ("NEXT EPISODE: THE STORY OF VIDEO STREAMING VIEWERSHIP IN INDIA," p. 262).

The study aims to take this thought ahead and explore how viewers actively engage with content through comments, transforming the act of watching into a participatory dialogue. Understanding the intricate dynamics of viewer interaction fosters insights into the complex interplay between content, audience perception, and the construction of individual identities within the realm of media consumption.

RESEARCH METHODOLOGY
Problem Statement: In the wake of India's digital renaissance and the unprecedented surge in Over-The-Top (OTT) content consumption, a significant gap exists in understanding the intricate dynamics of how Indian families are portrayed in OTT web-series and the subsequent impact on audience perceptions. While the OTT landscape has evolved rapidly, the nuanced representations of familial structures and dynamics remain relatively unexplored. This gap in knowledge poses a critical challenge, hindering the comprehension of the evolving contours of family portrayals in the digital realm and the potential implications for societal attitudes.

This Study Seeks to Address the Following Key Objectives:
1. **Explore Factors Influencing Content Choices:** Investigate the factors influencing viewers' choices when selecting specific OTT content, considering variables such as family type, environment, and opinion leaders.

2. **Assess the Impact on Audience Perceptions:** Examine the potential influence of OTT web-series on audience perceptions of family structures, dynamics, and societal norms. This includes gauging whether these representations contribute to shaping or challenging cultural attitudes.

By addressing these objectives, the research would add valuable insights to the evolving discourse on family representations in the digital age, shedding light on the interplay between OTT content, audience perception, and the construction of individual identities within the realm of media consumption.

Working Hypothesis:

Hypothesis: Influence of OTT Web-Series on Audience Perceptions
Null Hypothesis (H0): OTT web-series have no significant influence on audience perceptions of family structures, dynamics.

Alternative Hypothesis (H1): OTT web-series exert a noticeable influence on audience perceptions, contributing to the shaping or challenging of cultural attitudes towards family structures and dynamics.

METHODOLOGY

A questionnaire-based method, characteristic of descriptive research, was employed to test the hypothesis and achieve the research objectives. Descriptive research is designed to describe characteristics or behaviors of a given population. In this case, the research aimed to describe audience perceptions of family structures and dynamics in the context of OTT web-series exposure. The survey questionnaire was meticulously designed to gather quantitative data, providing numerical insights into viewers' habits, preferences, and the perceived impact of OTT content on their attitudes towards familial aspects. This method facilitated a comprehensive understanding of the audience's perspectives, contributing to a nuanced analysis of the influence of OTT web-series on their perceptions of family life.

Sample Collection:

In the conducted research, the sample selection methodology employed was judgement sampling, involving a population of approximately 50 individuals who were contacted via email. Due to the practical constraints of email outreach and accessibility, the researcher may have chosen participants based on convenience, availability, or other factors, which introduced a level of bias into the sample selection. Despite the introduced bias, the study aimed to provide valuable insights into the research subject based on the responses obtained from the sample of individuals approached via email communication.

Ethical Considerations: This study will adhere to ethical guidelines, ensuring participant anonymity, informed consent, and confidentiality of responses.

Hypothesis Testing:

H1: Whether portrayal of family structures in OTT web-series reflects the diversity of real-life familial experiences in Indian society vis-a- vis age

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	51.556[a]	54	.569
Likelihood Ratio	50.338	54	.616
Linear-by-Linear Association	3.152	1	.076
N of Valid Cases	50		

H1: Whether portrayal of family structures in OTT web-series reflects the diversity of real-life familial experiences in Indian society vis-a- vis gender

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.705[a]	3	.872
Likelihood Ratio	.705	3	.872
Linear-by-Linear Association	.161	1	.688
N of Valid Cases	50		

For the first Chi-Square tests related to the portrayal of family structures and age, the p-values (.569 and .616) are both greater than the typical significance level of 0.05, which suggests that there is no significant association between age and the perception of whether OTT web-series reflect the diversity of real-life familial experiences in Indian society.

In the second set of Chi-Square tests specifically focused on gender, the p-values (.872 for both Pearson and Likelihood Ratio tests) are also greater than 0.05, which implies that there is no significant association between gender and the viewpoint on whether OTT web-series portray family structures that reflect the diversity of real-life familial experiences in Indian society.

H1:Whether portrayal of family structures in OTT web-series reflects the diversity of real-life familial experiences in Indian society **vis-a-vis the type of family structures they watch**

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.628[a]	6	.049
Likelihood Ratio	15.272	6	.018

Linear-by-Linear Association	.171	1	.680
N of Valid Cases	50		

The Chi-Square tests suggest a **significant association** between the type of family structures watched and perceptions regarding whether OTT web-series reflect the diversity of real-life familial experiences in Indian society. However, it's essential to note that the Linear-by-Linear Association test did not reach significance (p-value = .680). This suggests that while there might be an overall association, the linear trend across categories may not be statistically significant.

To further test the correlation between the between the type of family structures watched and perceptions regarding whether OTT web-series reflect the diversity of real-life familial experiences in Indian society, the research used the descriptive tests to understand frequencies or percentages in the cross tabulation to identify patterns:

Cross-Tabulation

			FS3				Total
			Highly relevant	Somewhat relevant	Neutral	Not applicable	
FS	Joint family	Count	3	8	8	0	19
		% within FS	15.8%	42.1%	42.1%	0.0%	100.0%
		% within FS3	42.9%	38.1%	80.0%	0.0%	46.3%
	Nuclear Family	Count	3	13	1	3	20
		% within FS	15.0%	65.0%	5.0%	15.0%	100.0%
		% within FS3	42.9%	61.9%	10.0%	100.0%	48.8%
	Extended Family	Count	1	0	1	0	2
		% within FS	50.0%	0.0%	50.0%	0.0%	100.0%
		% within FS3	14.3%	0.0%	10.0%	0.0%	4.9%
Total		Count	7	21	10	3	50
		% within FS	17.1%	51.2%	24.4%	7.3%	100.0%
		% within FS3	100.0%	100.0%	100.0%	100.0%	100.0%

The tests conducted indicates that the largest proportion of responses for **Highly relevant and Somewhat relevant perceptions** comes from individuals who choose to see content bearing the portrayal of a nuclear family. Whereas, joint family seems to be associated with a higher proportion of **neutral perceptions.**

ANNOVA TEST

To further test, whether the type of family structure they find most engaging or relatable in OTT web-series influences, their understanding of gender roles, within Indian families; challenges or reinforces societal norms related to family dynamics and relationships and if it provides a realistic representation of different socioeconomic strata the researcher applied the ANNOVA test to understand the correlation between different variables:

ANOVA		Sum of Squares	df	Mean Square	F	Sig.
FS1	Between Groups	3.928	2	1.964	1.502	.236
	Within Groups	49.682	38	1.307		
	Total	53.610	40			
FS3	Between Groups	.140	2	.070	.099	.906
	Within Groups	26.884	38	.707		
	Total	27.024	40			
FS4	Between Groups	.116	2	.058	.067	.935
	Within Groups	32.908	38	.866		
	Total	33.024	40			
FS5	Between Groups	.075	2	.037	.055	.946
	Within Groups	25.682	38	.676		
	Total	25.756	40			
FS6	Between Groups	.057	2	.029	.032	.969
	Within Groups	34.187	38	.900		
	Total	34.244	40			

FS7	Between Groups	.324	2	.162	.193	.825
	Within Groups	31.871	38	.839		
	Total	32.195	40			

The ANOVA results reveal that there are no significant differences in individuals' perceptions of the engaging or relatable nature of family structures in OTT web-series based on the type of family structure (FS1). Similarly, no significant differences are found in the understanding of gender roles (FS3), perceptions of whether OTT web-series challenges or reinforces societal norms (FS4), and the realistic representation of socioeconomic strata (FS5) based on family structure types.

In summary, based on the ANOVA results, there is no evidence of a significant correlation between the type of family structure individuals find most engaging or relatable in OTT web-series and their perceptions of gender roles, societal norms, or socioeconomic strata within the context of these media portrayals.

Interpretation of the Tests:
Null Hypothesis (H0): OTT web-series have no significant influence on audience perceptions of family structures, dynamics.

Alternative Hypothesis (H1): OTT web-series exert a noticeable influence on audience perceptions, contributing to the shaping or challenging of cultural attitudes towards family structures and dynamics

The research findings lead to the rejection of the alternative hypothesis (H1), which posited that OTT web-series exert a noticeable influence on audience perceptions, contributing to the shaping or challenging of cultural attitudes towards family structures and dynamics. The analysis indicates that there is insufficient evidence to support the claim that OTT web-series have a significant impact on audience perceptions of family structures and dynamics. The study suggests that other factors or complexities may play a more prominent role in shaping these perceptions, leading to the acceptance of the null hypothesis (H0), which asserts that OTT web-series have no significant influence on audience perceptions in this context.

Additional Findings from the Survey:
Respondents expressed diverse opinions on whether OTT web-series accurately capture the complexities of Indian family life. Some respondents felt that certain series, such as "The Family Man" and "Gullak," provide a refreshing and realistic viewpoint on Indian family dynamics. However, others noted that many series are purely for entertainment and may not accurately reflect real-life scenarios.

Positive examples cited by respondents include "Aarya," which portrayed crucial aspects like relationships, financial problems, and drug addiction realistically. Additionally, series like "The Burari Case" and "Panchayat" were highlighted for depicting real circumstances and challenges faced by individuals in a compelling manner.

Challenges in Accuracy: Several respondents acknowledged challenges in accuracy, particularly in the portrayal of social and economic dynamics. Some mentioned that while OTT series excel in representing social issues and LGBTQ acceptance, they tend to rely on stereotypes when portraying socioeconomic strata.

Entertainment vs. Realism: A recurring theme is the tension between entertainment and realism. Respondents acknowledged that while some series may capture small scenarios of real life, most are designed for entertainment purposes, with fictionalized stories and modified narratives.

Please rate the relevance of the following themes related to family dynamics in OTT web-series on a scale from 1 to 5, where 5 is the most relevant to you and 1 is not so relevant:
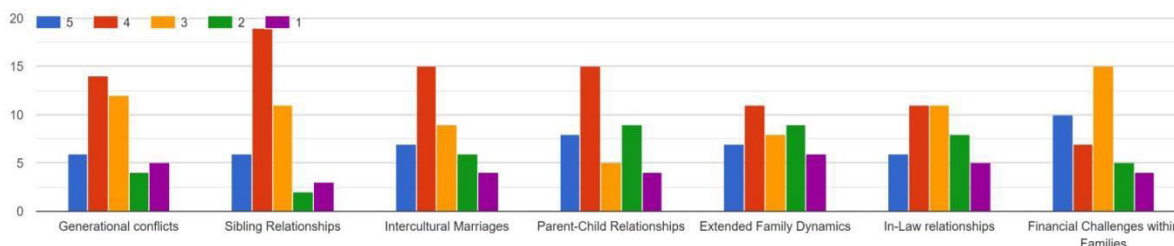
From this question, siblings relationships, and financial problems within families emerged as the most watched and preferred themes by the audience.

Scope of the Study:

This study delves into the multifaceted realm of Indian family representations within OTT web-series over the past five years, aiming to uncover the intricate storytelling techniques, character portrayals, and societal reflections embedded in digital narratives. The primary goal is to provide a holistic understanding of how OTT content shapes audience perceptions regarding family structures, dynamics, and cultural norms.

I) Theoritical Implications of the Study:

According to **Gerbner (1969)**, cultivation theory posits that long-term exposure to media content shapes and cultivates individuals' perceptions of reality. This theory assumes that media has the power to shape the way individuals perceive social reality over time.The study, through an examination of the evolving depictions of family life in OTT web-series, aims to assess cultivation theory, elucidating the potential impact of sustained exposure to these portrayals on shaping audience perceptions of Indian family structures and dynamics. A comprehensive analysis of changes in family representations spanning the past five years offers valuable insights into the ways these depictions may have contributed to the cultivation of specific perceptions or the reinforcement of prevailing cultural norms related to family life. The investigation aims to discern recurring themes and stereotypes embedded in OTT content, shedding light on their role in fostering a shared understanding among audiences regarding family roles, relationships, and cultural expectations. Through this exploration, the study seeks to contribute to a nuanced understanding of how OTT narratives contribute to the cultivation of audience perceptions, thereby providing valuable insights for both content creators and scholars in the field.

Similarly, uses and gratifications research, pioneered by **Katz, Blumler, and Gurevitch (1974),** underscores the active role of individuals in selecting and utilizing media to fulfill specific needs and desires. It assumes that audiences are not passive consumers but actively choose media to fulfill various psychological and social needs. The researcher's study employs uses and gratifications theory as a framework to delve into the motivations driving audience engagement with OTT web-series featuring family portrayals. By scrutinizing the specific needs and desires that viewers aim to fulfill through these portrayals, the research aims to unravel the multifaceted reasons behind audience preferences for family-themed content. An integral aspect of this exploration involves identifying the gratifications audiences derive from consuming OTT content related to family life. This encompasses a spectrum of needs, ranging from seeking entertainment and social integration to establishing cultural connections and fulfilling a desire to escape from reality. Furthermore, the study endeavors to discern how the evolution of family portrayals within OTT web-series aligns intricately with the dynamic landscape of changing audience preferences and needs. Through this examination, the research contributes valuable insights into the interactive nature of media consumption, offering a detailed understanding of the symbiotic relationship between evolving family narratives and the diverse needs of the audience.

II) Practical Implications of the Study:

The study on the evolution of Indian family portrayals in OTT web-series yields crucial practical implications for both content creators and the wider media landscape. Firstly, the research provides content creators with nuanced insights into audience expectations and preferences regarding family depictions. This understanding empowers creators to shape narratives authentically, ensuring the resonance of content with diverse viewership and aiding in the avoidance of stereotypes or insensitivity. Moreover, the study sheds light on the gratifications audiences derive from family-themed content, enabling creators to tailor productions to meet these needs, thereby enhancing audience satisfaction and fortifying the viewer-content relationship.

Secondly, the study has implications for platform competitiveness in the OTT industry. Content creators and platforms can leverage the findings to curate diverse and culturally resonant content libraries, gaining a competitive advantage. By recognizing the influence of family portrayals on audience perceptions, platforms can attract a broader user base and differentiate themselves in the market.

Lastly, the research holds broader societal implications by contributing to discussions on cultural reflections and societal norms. The portrayal of diverse family structures in OTT content has the potential to influence social perceptions and contribute to positive societal change. Overall, the study fosters a symbiotic relationship between creators and audiences, ensuring the creation of content that not only entertains but also authentically reflects and influences the cultural fabric of Indian society.

LIMITATIONS AND CONCLUSION:

The generalizability of results may be constrained by the specific selection of OTT web-series and the demographic characteristics of the audience under examination. The qualitative nature of the research, while

offering depth, might lack the statistical robustness associated with quantitative approaches, limiting the general applicability of certain findings.

Despite these limitations, the study holds practical implications for OTT makers by offering insights into audience expectations and preferences. Insights derived from this research can provide content creators with a nuanced understanding of audience expectations and preferences, aiding in the refinement of storytelling strategies. Ultimately, this study aims to foster a symbiotic relationship between creators and audiences, contributing to the production of content that resonates authentically with diverse viewership while ensuring the continued success and relevance of OTT platforms. Future research could delve into the impact of evolving OTT platform monetization models on user satisfaction, content quality, and platform sustainability. Exploring emerging models and their implications, such as hybrid subscription-advertising approaches, would provide valuable insights for industry optimization in the dynamic digital content landscape.

Appendices:

Questionnaire:

1) What type of family structure do you find most engaging or relatable in the OTT web-series you watch?

- Nuclear family

- Joint family

- Extended family

- Other (please specify)

2) How often do you intentionally seek out OTT web-series that depict a specific type of family structure (e.g., nuclear, joint, extended)?

- Very frequently

- Frequently

- Occasionally

- Rarely

- Never

3) Please rate the relevance of the following themes related to family dynamics in OTT web-series on a scale from 1 to 5, where 5 is the most relevant to you and 1 is not so relevant:

- Generational conflicts

- Sibling relationships

- Intercultural marriages

- Parent-child relationships

- Extended family dynamics

- In-laws relationships

- Financial challenges within families

4) To what extent do you believe that the portrayal of family structures in OTT web-series reflects the diversity of real-life familial experiences in Indian society?

- Highly relevant/applicable

- Somewhat relevant/applicable

- Neutral

- Not applicable

5) In your opinion, how much influence do OTT web-series have on shaping your understanding of gender roles within Indian families?

- Highly relevant/applicable

- Somewhat relevant/applicable

- Neutral

- Not applicable

6) Do you feel that OTT web-series contribute to challenging or reinforcing societal norms related to family dynamics and relationships?

- Highly relevant/applicable

- Somewhat relevant/applicable

- Neutral

- Not applicable

7) To what extent do you find the portrayal of family structures in OTT web-series relatable to your own cultural or societal background?

- Highly relevant/applicable

- Somewhat relevant/applicable

- Neutral

- Not applicable

8) In your view, do OTT web-series provide a realistic representation of different socioeconomic strata within Indian families?

- Highly relevant/applicable

- Somewhat relevant/applicable

- Neutral

- Not applicable

9) Considering the diverse narratives presented in OTT web-series, can you share your thoughts on whether these portrayals accurately capture the complexities and nuances of Indian family life? Please provide examples or insights to support your perspective.

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BIBLIOMETRIC ANALYSIS OF CAUSE-RELATED MARKETING (CRM) FROM 2010 TO 2023 USING VOSVIEWER

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ABSTRACT

This study employs a systematic research method to conduct a comprehensive bibliometric analysis of cause-related marketing (CRM) from 2010 to 2023 using VOSviewer. The Dimensions database, a bibliographic repository, is utilized with defined search queries to collect relevant papers, and inclusion and exclusion criteria are established to filter the literature based on peer-reviewed status or research design. The final dataset of 1,998 articles is subjected to co-authorship and citation analyses using VOSviewer, revealing intricate networks and influential publications. Various bibliometric techniques, including co-citation analysis, author impact analysis, cluster analysis, and timeline analysis, contribute to a holistic understanding of CRM research dynamics. This methodological rigor ensures a comprehensive exploration of the collaborative, influential, and evolving characteristics of CRM research.

Keywords :Cause-Related Marketing, Cause marketing , Bibliometric Analysis, Co-Authorship Analysis, Citation Analysis

INTRODUCTION

Cause-related marketing (CRM) is a form of marketing in which a company partners with a non-profit organization to promote a specific cause. This type of marketing can be beneficial for both the company and the non-profit organization. For the company, CRM can help to improve brand image, customer loyalty, and employee satisfaction. For the non-profit organization, CRM can provide much-needed funding and awareness for its cause. There is a growing body of research on CRM. This research has examined the effectiveness of CRM campaigns, the factors that influence consumer perceptions of CRM, and the ethical implications of CRM. Cause-related marketing (CRM) has emerged as a dynamic and influential strategy within the realm of corporate social responsibility, where businesses align themselves with social or environmental causes to create a mutually beneficial relationship between profit-making and social impact (Adkins & Hirsch, 2010; Varadarajan & Menon, 2019). Over the past decade, the landscape of CRM has evolved significantly, driven by changing consumer expectations and a growing emphasis on sustainable business practices (Du, Bhattacharya, & Sen, 2010).

In recent years, there has been a growing interest in CRM. This is due in part to the increasing social and environmental consciousness of consumers. Consumers are now more likely to support companies that are committed to social responsibility. Additionally, CRM can be an effective way to reach new customers and target specific demographics.

As the field of CRM continues to expand, understanding the scholarly landscape and the intellectual evolution of research in this domain becomes imperative. Bibliometric analysis, a quantitative method for evaluating patterns and trends within academic literature, provides a comprehensive approach to discern the intellectual structure, key contributors, and emerging themes in CRM research (Cobo et al., 2011). This paper employs bibliometric techniques to analyze and map the research landscape of CRM from 2010 to 2023, shedding light on the trajectory of scholarship and identifying crucial gaps or areas for future exploration.

VOSviewer, a widely used bibliometric analysis tool (van Eck & Waltman, 2010), will be employed to visualize the co-citation and co-authorship networks, enabling a nuanced understanding of the relationships between authors, journals, and key concepts in CRM literature. The data for this analysis will be sourced from the Dimensions database, a comprehensive scholarly research database that spans a multitude of disciplines.

Studying "Bibliometric Analysis on Cause-Related Marketing (2010-2023)" holds paramount importance in the contemporary academic and business landscape. Cause-related marketing (CRM) has become a crucial strategy for businesses seeking to align their operations with social and environmental values. A bibliometric analysis of CRM research from 2010 to 2023 provides a systematic and quantitative examination of the scholarly output in this domain, offering insights into the evolution, trends, and influential contributors within the field. By mapping co-authorship networks, citation patterns, and key sources, this analysis not only illuminates the collaborative dynamics among researchers but also identifies pivotal publications that have shaped the discourse. Understanding the global distribution of CRM research and its multidisciplinary nature aids in

recognizing the diverse perspectives contributing to this field. Moreover, the trend analysis over the specified period unveils the growth trajectory of CRM as a research area, indicating its enduring significance and potential for future contributions. This study, therefore, serves as a valuable tool for scholars, practitioners fostering a deeper comprehension of the evolving landscape of cause-related marketing and its implications for both academia and industry.

METHOD
The research method for the study on cause-related marketing (CRM) with bibliometric analysis. The researcher conducts an extensive literature review to comprehend existing knowledge. Using the Dimensions database, the researcher employs defined search queries to collect relevant papers within the specified timeframe (2010-2023). In this phase, inclusion and exclusion criteria are established to filter the literature.The selected papers are then subjected to bibliometric analysis using VOSviewer, a tool chosen for its capabilities in co-citation and co-authorship network visualization. The data analysis process for this study will involve several steps. First, the full dataset of 1,426,624 articles retrieved from Dimension.ai will be filtered to include only those that contain the phrase "cause-related marketing" in either the title or abstract. This will reduce the dataset to 2,493 articles. Next, the dataset was further filtered to include only articles published between 2010 and 2023. This result in a final dataset of 1,998 articles.

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009)A PRISMA flowchart, also known as a Preferred Reporting Items for Systematic Reviews and Meta-Analyses flowchart, is a visual representation of the steps involved in conducting a systematic review or meta-analysis is used in the filtering process of article. It is a standardized way of reporting the search strategy, selection criteria, and results of a systematic review. The PRISMA flowchart was first developed in 2009 and has since been updated twice, in 2015 and 2020.
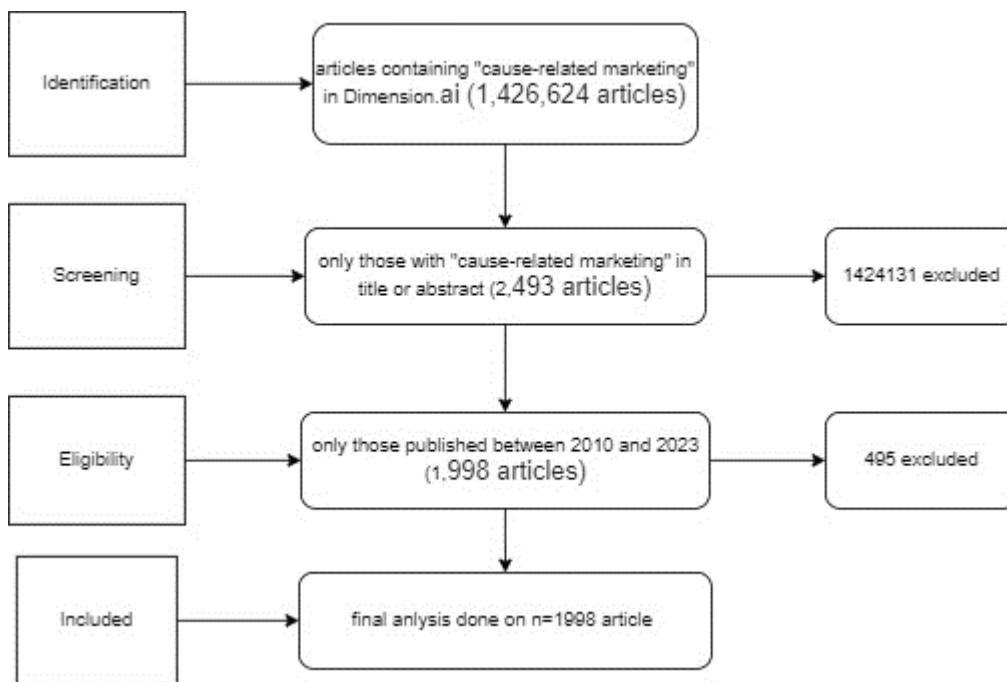
Figure 1: Systematic review flow diagram. Based on PRISMA flow diagram

Co-Authorship Analysis:
Co-authorship analysis is based on the idea that authors who collaborate on research are more likely to be connected in some way. This connection may be due to their shared interests, expertise, or location. By analyzing co-authorship networks, researchers can identify groups of authors who are working on similar topics or who are part of the same academic community Van Eck, N. J., & Waltman, L. (2010) Waltman, L. (2016) Waltman, L., van Eck, N. J., & Leeuwen, T. N. (2011). .

Co-Citation Analysis:
Co-citation analysis is based on the idea that publications that are cited by the same third publication are likely to be related to each other. This relationship may be due to their shared subject matter, methodology, or theoretical framework. By analyzing co-citation networks, researchers can identify groups of publications that are making significant contributions to a particular field of study. Small, H. G. (1973). White, H. C., & McCain, K. W. (1989). Waltman, L. (2016). Waltman, L., van Eck, N. J., & Leeuwen, T. N. (2011).

Author Impact Analysis: Author impact analysis is a technique for measuring the impact of individual authors on a particular field of research. This type of analysis is commonly used in bibliometrics, which is the study of the quantitative properties of information sources and their usage. Author impact analysis is typically based on the citation impact of an author's publications. The citation impact of a publication is a measure of how often it has been cited by other publications. Egghe, L. (2006). Pinski, J., & Narin, F. (1969). Hirsch, J. E. (2005). Egghe, L. (2010).

Cluster Analysis: Cluster analysis is a technique for grouping objects based on their similarity. In the context of bibliometrics, cluster analysis can be used to identify groups of related publications. This is done by measuring the similarity between publications based on their keywords, abstracts, or citations. Jain, A. K. (2010). Berkhin, P. (2006). Everitt, B. S., Landau, S., Leese, M., & Stahl, D. (2011).

Timeline Analysis: Timeline analysis is a technique for visualizing the evolution of a particular topic or field of research over time. This is done by plotting the number of publications on the topic or field of research against time. Timeline analysis can be used to identify periods of high and low research activity, to track the emergence of new research trends, and to compare the research output of different institutions or countries over time. Van Eck, N. J., & Waltman, L. (2010). Waltman, L. (2016). Waltman, L., van Eck, N. J., & Leeuwen, T. N. (2011).

Data Analysis and Interpretation

The retrieved articles will be analyzed using VOSviewer software, a specialized tool designed to visualize bibliometric data. VOSviewer will generate co-occurrence maps, revealing the frequency with which keywords appear together within the literature. These maps will be analyzed to identify key research themes and trends in CRM. Additionally, citation networks will be constructed to visualize the relationships between influential authors and their contributions to the field. Overlay maps will be employed to identify the evolution of CRM research over time, highlighting emerging trends and shifting research foci.

Co authorship
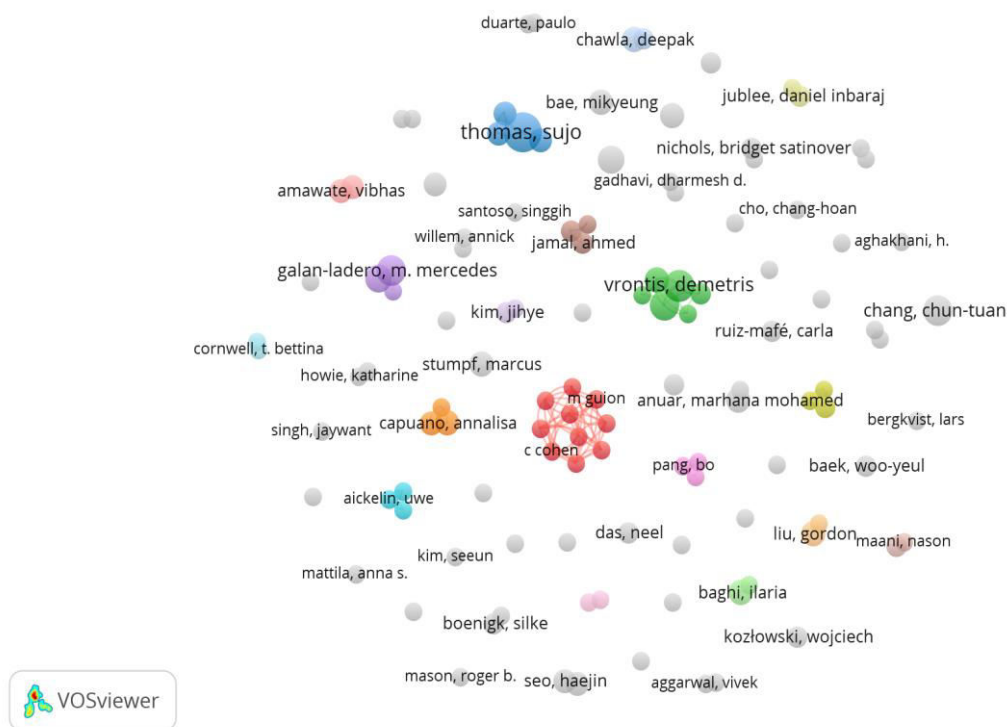
Figure 1: Co Authorship Network analysis of Cause Related Marketing (Year2010-2023)

The co-authorship analysis of cause-related marketing research using VOSviewer revealed a complex network of relationships between authors, with 117 distinct clusters, 100 links, and a total link strength of 299. This intricate network highlights the collaborative nature of cause-related marketing research, with researchers from diverse disciplines working together to advance the field. The analysis also identified several prominent clusters of authors, suggesting that there are well-established research communities within cause-related marketing.

Citation Analysis
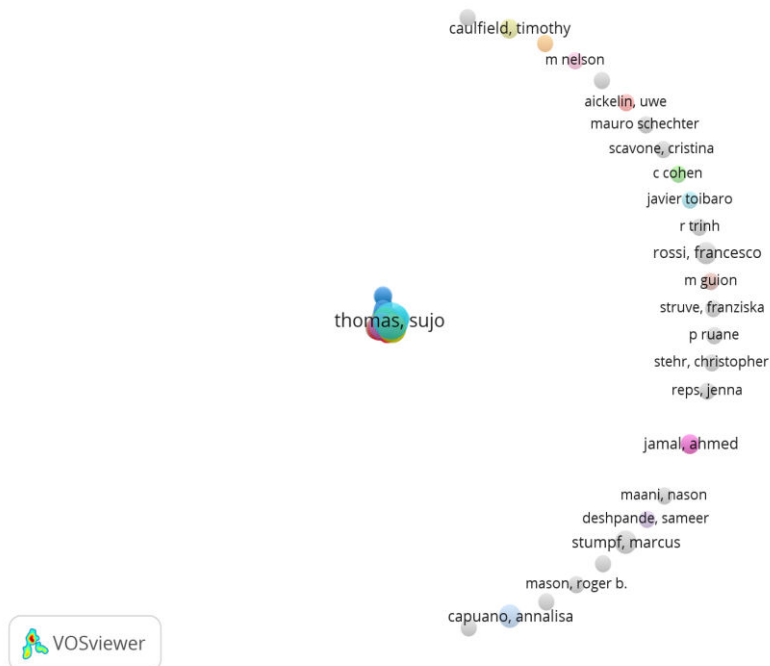
Figure 2: Citation analysis of Cause Related Marketing (Year2010-2023)

The citation analysis of cause-related marketing research using VOSviewer revealed a rich and interconnected network of influential publications, with 108 distinct clusters, 730 links, and a total link strength of 1651. This extensive network highlights the significant impact of cause-related marketing research, with highly cited publications informing and shaping the field. The analysis also identified several prominent clusters of publications, suggesting that there are well-established research themes within cause-related marketing.

Table 1: top 15 author with maximum citation research on cause related marketing

Sr.No	Author	Documents	Citations	Total Link Strength
1	Jamal, Ahmed	4	2167	7
2	Wang, Teresa W.	4	2167	7
3	Cullen, Karen A.	3	1496	6
4	Lii, Yuan-Shuh	3	423	21
5	Chang, Chun-Tuan	8	332	133
6	Christofi, Michael	8	298	142
7	Vrontis, Demetris	9	296	137
8	Folse, Judith Anne Garretson	3	253	96
9	Leonidou, Erasmia	6	249	106
10	Guerreiro, João	3	185	49
11	Liu, Gordon	6	169	81
12	Ruiz-Mafé, Carla	4	160	45
13	Thomas, Sujo	14	160	236
14	Hawkins, Roberta	5	145	21
15	Youn, Seounmi	3	114	27

Table 1 presents the top 15 authors with the highest citation research on cause-related marketing (CRM). At the forefront are Jamal, Ahmed, and Wang, Teresa W., each with four documents and a total link strength of 7. Cullen, Karen A., follows closely with three documents and a link strength of 6. Notably, Lii, Yuan-Shuh, and Chang, Chun-Tuan, stand out with 21 and 133 link strengths, respectively, indicating substantial influence in the field. The comprehensive list includes researchers such as Christofi, Michael, Vrontis, Demetris, and Folse, Judith Anne Garretson, showcasing their contributions to CRM literature. The diverse range of citations, documents, and link strengths across these authors underscores the multidimensional nature of cause-related marketing research, with Thomas, Sujo, emerging as a particularly impactful figure with 14 documents and a remarkable total link strength of 236.

Analysis of Journal/Sources with cause related marketing publication

Figure 3: Analysis of Journal/Sources with cause related marketing publication

Sr.No	Source	Documents	Citations
1	Mmwr Morbidity And Mortality Weekly Report	4	2001
2	Journal Of Business Ethics	15	1251
3	Journal Of Marketing Communications	11	544
4	International Marketing Review	20	513
5	International Review On Public And Nonprofit Marketing	30	510
6	Journal Of Business Research	19	510
7	International Journal Of Research In Marketing	5	481
8	Journal Of Consumer Marketing	11	464
9	International Journal Of Advertising	12	380
10	Journal Of The Academy Of Marketing Science	7	369
11	Journal Of Marketing Research	6	324
12	Journal Of Retailing	4	322
13	European Journal Of Marketing	8	305
14	Journal Of Marketing	3	271
15	International Journal Of Nonprofit And Voluntary Sector Marketing	10	235
16	Drug Safety	8	227
17	Journal Of Advertising	3	219
18	Sustainability	27	202
19	Psychology And Marketing	9	198
20	Cochrane Database Of Systematic Reviews	3	179

Table 2: top 20 Source/Journal with highest Citification

The provided table outlines the top 20 sources with the highest citation counts in a research dataset. The "Journal of Business Ethics" holds the highest citation count with 1,251 citations, followed by "International Marketing Review" with 513 citations and "International Review on Public and Nonprofit Marketing" with 510 citations. Other notable sources include "Journal of Business Research," "Journal of Marketing Communications," and "Journal of Consumer Marketing." These sources span diverse disciplines such as business ethics, marketing, public and nonprofit marketing, and healthcare, as evident from the inclusion of journals like "Drug Safety" and "Cochrane Database of Systematic Reviews." This compilation reflects the multidisciplinary nature of the research, with sources from both academic and specialized fields contributing significantly to the overall citation landscape.

Analysis of Publication Geography wise
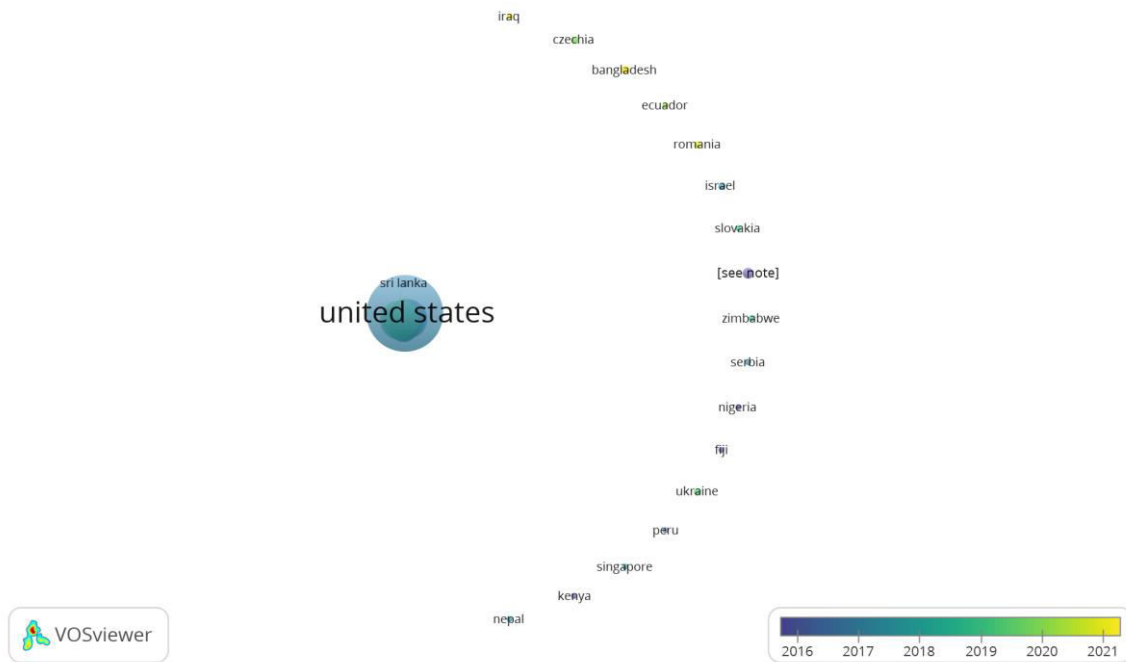
Figure4: Analysis of Publication Geography wise

Sr.No	Country	Documents	Citations
1	United States	364	10076
2	China	99	1404
3	United Kingdom	94	3139
4	India	88	1051
5	Germany	81	1747
6	Canada	64	980
7	Italy	60	846
8	Australia	53	678
9	Spain	52	751
10	South Korea	43	775

Table 3: top 10 countries for highest publication in cause related marketing

The table provides a ranking of the top 10 countries based on the number of publications in the field of cause-related marketing. The United States leads with 364 documents, reflecting a substantial contribution to the scholarly discourse in this domain. China follows with 99 publications, underscoring its growing influence and interest in cause-related marketing research. The United Kingdom and India hold the third and fourth positions, contributing significantly with 94 and 88 documents, respectively. Germany, Canada, Italy, Australia, Spain, and South Korea complete the top 10, showcasing a global distribution of research output in cause-related marketing. These countries, through their diverse perspectives and contributions, play a pivotal role in advancing knowledge and understanding within the field.

Timeline Analysis
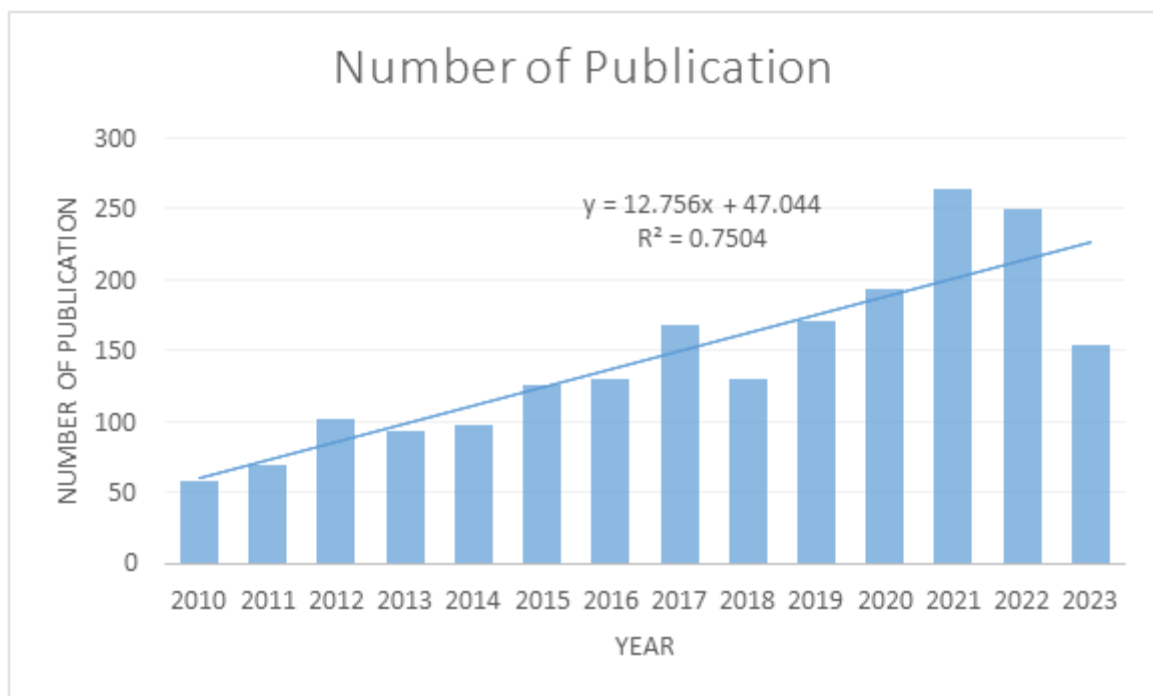
Figure5: Trend in Cause related marketing publication

Figure 5 shows the number of publications on CRM has increased steadily from 2010 to 2023, with a slight dip in 2020. This suggests that CRM is a growing field of research, with increasing interest from scholars and practitioners alike. This equation shows that the number of publications on CRM has increased by an average of 12.756 publications per year over the period from 2010 to 2023. The equation also shows that there was a base level of 47.044 publications on CRM in 2010.

The equation can be used to estimate the number of publications on CRM in future years. For example, the equation predicts that there will be approximately 179.1 publications on CRM in 2024.

The trend of increasing publications on CRM is likely due to a number of factors. The growing awareness of the importance of social responsibility among businesses and consumers.The increasing availability of data on CRM initiatives, which is enabling researchers to conduct more rigorous studies.The growing recognition of the impact of CRM on a variety of outcomes, such as brand image, customer loyalty, and sales. The figure 5 shows that the number of publications on CRM is expected to continue to grow in 2023. This suggests that CRM is a field of research that is likely to continue to evolve and produce new insights in the coming years.

FINDINGS
The co-authorship analysis of cause-related marketing (CRM) research using VOSviewer unveils a highly intricate network comprising 117 distinct clusters and 100 links, indicative of the collaborative nature of CRM research. This network, with a total link strength of 299, underscores the interdisciplinary collaboration among researchers, contributing to the advancement of the field. The identification of prominent clusters suggests the existence of well-established research communities within CRM, fostering a rich exchange of ideas and insights.

The citation analysis of CRM research, conducted through VOSviewer, reveals a robust and interconnected network of influential publications. With 108 distinct clusters and 730 links, the total link strength reaching 1651 emphasizes the substantial impact of CRM research. The presence of notable publication clusters suggests the existence of enduring and influential themes within CRM literature. Highly cited publications play a pivotal role in shaping and informing the field, signifying the significance of established knowledge in the evolving landscape of CRM research. The top 20 sources in the research dataset exhibit a diverse range of disciplines, reflecting the multidisciplinary nature of CRM research. "Journal of Business Ethics" leads with 1,251 citations, underscoring its pivotal role in the CRM discourse. Other influential sources such as "International Marketing Review" and "Journal of Business Research" contribute significantly to the overall citation landscape. The inclusion of journals from healthcare and systematic reviews highlights the interdisciplinary reach of CRM research.

The top 10 countries based on the number of publications in CRM showcase a global distribution of research output. The United States leads with 364 documents, emphasizing its substantial contribution to the scholarly discourse. China's notable presence, with 99 publications, signals its growing influence and interest in CRM research. The diversity of contributions from the United Kingdom, India, Germany, Canada, Italy, Australia, Spain, and South Korea demonstrates a collective effort in advancing knowledge and understanding within the CRM field.

The trend analysis of CRM publications from 2010 to 2023 indicates a steady increase, affirming the growth of CRM as a burgeoning field of research. The equation, with an average increase of 12.756 publications per year, captures this upward trajectory. Despite a slight dip in 2020, the overall trend suggests sustained interest and a growing awareness of social responsibility among businesses and consumers. The predictive equation estimates a continued growth in CRM publications, reaching approximately 179.1 publications in 2024, highlighting the field's enduring significance and potential for future contributions.

These findings collectively underscore the collaborative and influential nature of CRM research, emphasizing the global, interdisciplinary, and evolving characteristics of the field. The rich networks of authors and publications, coupled with the sustained growth in research output, position cause-related marketing as a dynamic area poised for continued exploration and impact.

CONCLUSION

In conclusion, the bibliometric analysis conducted on cause-related marketing (CRM) research using VOSviewer from 2010 to 2023 has revealed a vibrant and collaborative landscape within the field. The co-authorship analysis exposed a highly intricate network, with 117 distinct clusters and 100 links, showcasing the interdisciplinary collaboration that propels CRM research forward. Noteworthy is the identification of prominent clusters, indicating the existence of well-established research communities, fostering an environment of rich exchange of ideas and insights. Simultaneously, the citation analysis demonstrated the substantial impact of CRM research, unveiling a robust and interconnected network of influential publications with 108 distinct clusters and 730 links. Highly cited publications emerged as pivotal players, shaping and informing the field, underscoring the enduring and influential themes within CRM literature. The top 20 sources with the highest citations and the global distribution of CRM publications among the top 10 countries further highlighted the multidisciplinary and collaborative nature of CRM research. Finally, the trend analysis confirmed the steady growth of CRM as a burgeoning field, with an average increase of 12.756 publications per year, reaffirming its enduring significance and potential for future contributions. Collectively, these findings position cause-related marketing as a dynamic and evolving area, ripe for continued exploration and impact on a global scale.

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ROLE OF SOCIAL MEDIA IN INFLUENCING INVESTMENT DECISIONS OF GEN-Z

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ABSTRACT

In the past two decades, social media has developed significantly. Various social media sites have emerged and become very popular, including Facebook, WhatsApp, Twitter (recently X), and LinkedIn.

The rise of the Gen-Z generation, or those born between 2000 and 2010, coincided with the expansion of social media. Since Gen-Z were exposed to social media from a young age, they have utilised it for all of their needs and have integrated it into everyday activities. Social media have been considered an instrumental factor in catalyzing Gen-Zs into investing activities. In our research, we have tried to analyse to what extent Social Media is responsible for driving the Gen-Z located in urban India for Investing activities.

Social Media is a prominent determinant of the type of influence youngsters are having on their learning, decision making, behavioural patterns, etc.

Social media has a significant impact on the financial behavior of Gen Z. The exposure to online trends, influencers, and advertisements can influence the spending habits and financial decisions of consumers. Additionally, the pressure to showcase a curated lifestyle on social platforms may contribute to impulsive spending. Integrating financial education within the context of social media influence is vital for helping Gen Z navigate the :intersection between online culture and responsible financial management.

Taking into account the behavior of young adults and the substantial impact of social media platforms, this article advocates for an analysis and comprehension of the "Impact of Social Media on Investment Choices among Gen-Z."

Purpose: *The aim of the research is to investigate and analyze the dependent variable of investment decisions of GenZ with social media as the mediator that was impacted by 3 independent variables such as: Social Influence, Risk Taking Behaviour and Impulsive investing behaviour.*

Design Methodology: *Researchers employed a meticulously crafted self-administered questionnaire to collect precise information and uphold a rigorous research approach. The relationship between constructs was examined through a descriptive study approach, utilizing an online questionnaire distributed via Google Forms for data collection.*

Findings: *The study's results indicated a significant connection between social media and investment choices, as all three independent variables exhibited favorable correlations with the dependent variable (investment decisions). In simpler terms, the study suggests that social media influences investment decisions among Gen Z.*

Limitations: *This study is limited in selection of samples. The sample only covered one generation , generation-z in Navi Mumbai which limits generalizability of the findings. The study also has various theoretical and practical contributions.*

Originality/Value: *This study intends to add to the body of knowledge for future financial research on an important topic: the impact of social media on Gen Z's investment decisions which is affected by their financial risk appetite, social influence and impulsive buying behaviour.*

Keywords: Financial Awareness from social media, Risk-Taking Behaviour, Investment Decision, Behavioural Finance, Social Influence, AIDA.

Goals and benefits of research:

● **Research Purposes-**

Based on the problems above, this research was carried out with the objectives:

● **Objective 1:** To know the extent of social media impact on the investment decisions taken by Gen-Z.

● **Objective 2:** To assess the trust Gen-Z are having in the information they receive from social media.

● **Objective 3:** To identify the risk appetite of Gen-Zs influenced by social media.

Research Gap: The identified research gap is that with the rise of technology and the boom of financial influencers on social media, GenZ has access to information on investing and a plethora of content and people might get more interested in something more entertaining rather than navigating or exploring some financial content and polishing their financial literacy. But, that awareness is not getting converted to action by most of the sample size, This is because of the risk factors and low level of trust involved with investing. Furthermore, Genz is a generation that has grown up in a fast-paced world and wants quick returns on investment. So, they abstain from investing in Long-Term capital gains and future planning.

Identification of the Research Gaps:

1. **Geographic Segmentation –** The article limits geographic segmentation, considering data samples for study only for Genz within Navi Mumbai.

2. **Demographic Segmentation –** The article limits the demographic segmentation by considering only data samples from young adults (between the ages of 16 – 30)

3. **Investment Options –** The article focuses more on the newer and short-term investment options that are catchy among young adults as these investment options seem to be promising higher returns.

4. **Example:-** Mutual Funds, Stocks and Real Estate.

LITERATURE REVIEW:

Social media has a better predictive value, resulting in a shorter "wear-in" period than traditional web media. (Nilsson, J. Luo, X., Zhang, J., & Duan, W. 2021). Further, Women and better educated investors were more likely to devote a greater portion of their income to market investments. Nilsson, J. (2008).

Consumers are increasingly looking to their peers for product recommendations, a trend facilitated by the emergence of social media and the accompanying generation and consumption of user-generated content. (Chen, H., De, P., Hu, Y. J., & Hwang, B. H. (2013)

Patterns contained in social media may help provide information that allows for a better understanding and prediction of social events. Previous methods of obtaining information about public opinions, such as questionnaire surveys, have proven to be effective but expensive and time-consuming, whereas social media platforms, which are extremely popular and contain massive amounts of data, can provide valuable sources for sentiment if an effective method of data analysis is available. The three explanatory variables are: social media (SM), financial literacy (FL), and Gen Z community behaviour (GzCB) to assess the dependent variable investment decisions (ID) of GenZ investors. (Akmese et al., 2016).

Because information from social media is easily obtained, constantly updated, and available in real-time. As a result, investors frequently utilize this chance to make a better investment choice. The behaviour of online communities appears to have an influence on investment decisions as well. In other words, it has been demonstrated that online community behaviour has an influence on investment decisions.(Prof. Dr. S.K. Khatik et al. 2021)

Big data research relies heavily on sentiment analysis. It's also known as "opinion mining," and it refers to a set of computational techniques for detecting, extracting, and distilling human emotions, thoughts, or opinions from textual data in internet content directed at specific entities.

p. 20 (Bukovina, 2016). The complex behaviour of a society is captured in big data from social media. The behavioural finance framework serves as the primary incentive for the use of social media data in the field of capital markets because this behaviour and its relationship to capital markets dominates the subject of behavioural science study. p. 20 (Bukovina, 2016).

Generation Z, or also known as zoomers, is the successor generation to the millennial generation and the predecessor to the Alpha generation, are those born between the end of the decade 1990 and 2010. Is a digital generation who is proficient and passionate about information technology and really likes and often communicates with all groups, especially via social networks such as Facebook, Twitter, Line, Whatsapp, Telegram, Instagram or SMS. Through this media, they are freer to express what they feel and think spontaneously. Generation Z is known to be more independent than previous generations. They don't wait for parents to teach them things or tell them how to make decisions. When translated to the workplace, this generation is developing to choose to work and study on their own. d. Tends to be tolerant of cultural differences and really cares about the environment. They want everything to be fast, not long winded or complicated. (Miriam Webster, 2021)

Since Generation Z was born in the decade following the broad adoption of the World Wide Web, they are also acknowledged as "Digital Natives." World Wide Web. The character of this generation can be described as tech savvy, globally connected (in the virtual world), smarter, flexible, and tolerant of diverse cultures. (Singh, 2014)

Asia's younger generation spends a lot and saves little, because they believe they have the ability to earn money, while also being aware that their parents have savings. They also have a low level of financial planning literacy, but have a high level of expected benefits. However, on the other hand, according to them, the effort that must be expended to carry out financial planning is also high. Furthermore, according to them, the condition of the financial planning facilities and ecosystem is high or good. From these various characteristics, they have a positive attitude towards financial planning. (Yosef Budi Susanto et al. 2022)

Previous researchers in their study have found that financial knowledge is a predictor of financial well-being (Archuleta et al., 2013; Norvilitis and MacLean, 2010). Joo and Grable (2004) have observed that there exists a relationship between financial knowledge, financial satisfaction and financial risk attitude of the individual (Britt et al., 2012; Falahati et al., 2012; Falahati and Paim, 2011)

Low level of risk perception and financial literacy has a negative and significant impact on Generation Z's impulsive buying behavior. It can be interpreted, if an individual has a low level of financial literacy, that person tends to perform a high impulsive buying behavior. (Maximilla Febriana Ayuningtyas , Atika Irawan 2021)

OBJECTIVE OF RESEARCH STUDY:
1. To know the extent of the social-media impact on the investment decisions taken by the Gen-Z.

2. To assess the trust Gen-Z are having in the information they receive from Social Media.

3. To identify the risk appetite of Gen-Zs influenced by Social Media.

Geographical Scope: The geographical scope of the study is limited to Navi Mumbai.

Demographic Scope: Demographic scope is limited to people born between 1997 to 2012.

The AIDA Framework :
"The AIDA Framework" is a marketing and advertising model that outlines the stages a potential customer goes through when interacting with a product or service. The acronym "AIDA" stands for Attention, Interest, Desire, and Action. Here's a brief overview of each stage:

Attention: Attracting the target audience's attention is the first step. This involves creating a compelling and eye-catching message, often through advertising, that grabs the audience's interest and makes them aware of the product or service.

Interest: Once attention is captured, the goal is to maintain and deepen the audience's interest. This involves providing more information about the product or service, highlighting its unique selling points, and addressing the audience's needs or concerns. Desire: After generating interest, the next step is to create a desire for the product or service. This is often achieved by showcasing the benefits, value propositions, and advantages that the offering provides. Building an emotional connection can also play a crucial role in this stage.

Action: The final stage is to prompt the audience to take a specific action, such as making a purchase, signing up for a newsletter, or requesting more information. This step involves providing a clear and compelling call-to-action that encourages the audience to convert from potential customers to actual customers.

The AIDA framework is widely used in marketing and advertising to structure campaigns and communication strategies, helping businesses guide consumers through a sequential series of steps toward making a purchase decision.

Applying the AIDA framework to the impact of social media on the investment decisions of Generation Z:

Attention:
● Capture the attention of Generation Z by leveraging visually appealing and engaging content on social media platforms.

● Use attention-grabbing headlines, visuals, and messages to highlight the relevance of investment-related information to their interests and aspirations.

Interest:

● Deepen interest by providing valuable and relevant content on investment opportunities, financial education, and success stories.

● Tailor messages resonate with the unique preferences and concerns of Generation Z, emphasizing the potential for financial growth and independence.

Desired:

● Create a desire for financial literacy and investment knowledge by showcasing the benefits of making informed investment decisions.

● Highlight the potential for long-term wealth accumulation, personal empowerment, and achieving life goals through prudent investment choices.

Action:

● Encourage action by incorporating clear calls to action, such as links to educational resources, investment platforms, or expert advice.

● Foster a sense of community by promoting discussions and user-generated content related to investment experiences on social media, encouraging Generation Z to actively participate in the investment conversation.

By employing the AIDA framework in the context of social media's impact on Generation Z's investment decisions, marketers and influencers can strategically guide this demographic through the stages of attention, interest, and desire, and ultimately prompt them to take action in the realm of financial decision-making.

HYPOTHESIS:

The 2 Hypothesis to be Tested are:
H_1: Investment awareness is present among Gen-Z.

H_1: There is an impact of social media in assessment of personal financial goals among Gen-Z.

RESEARCH SAMPLE:
The data indicates that most survey participants are female 51.3% , with 47.2% being males. 1 person preferred not to say their gender. Among these young adults, a significant portion falls within the age group of 16 to 30 years. The responses predominantly come from students, outnumbering working professionals by 86.9%. Out of the selected sample of the 34.8% of people who invest, the data analysis reveals that 97.4% of respondents have encountered financial investment content on social media platforms.

METHODOLOGY:
Questionnaire: The set of questions based on our understanding of the behavioral pattern of Gen-Zs was designed and circulated. The responses were recorded and analyzed.

ANALYSIS AND INTERPRETATION: I.

Birth year:

115 responses
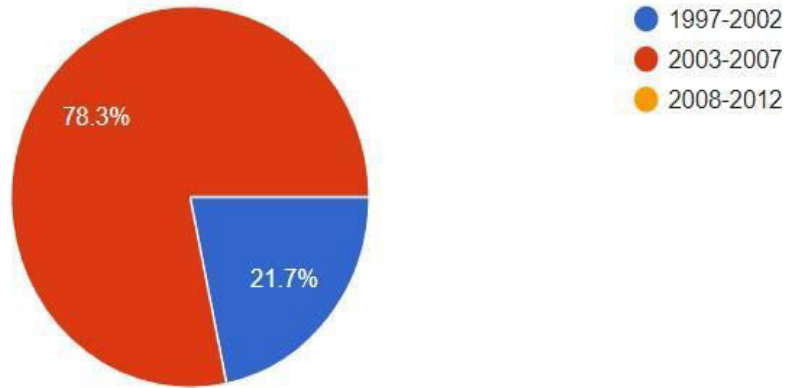
II.

1.

Which degree you have pursued/are pursuing:

115 responses
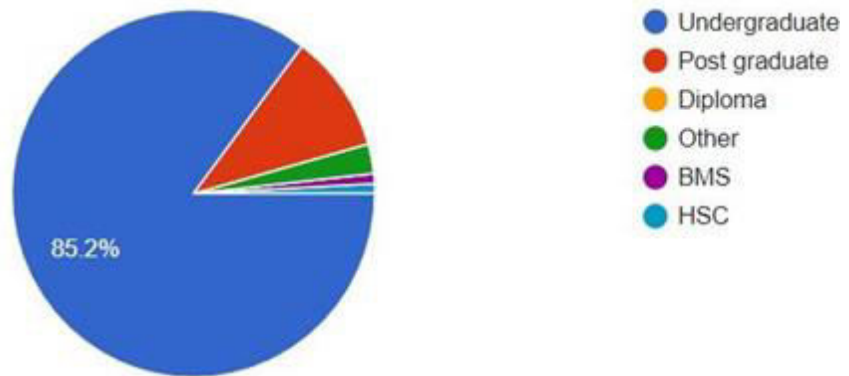
2.

Do you use social Media?

116 responses
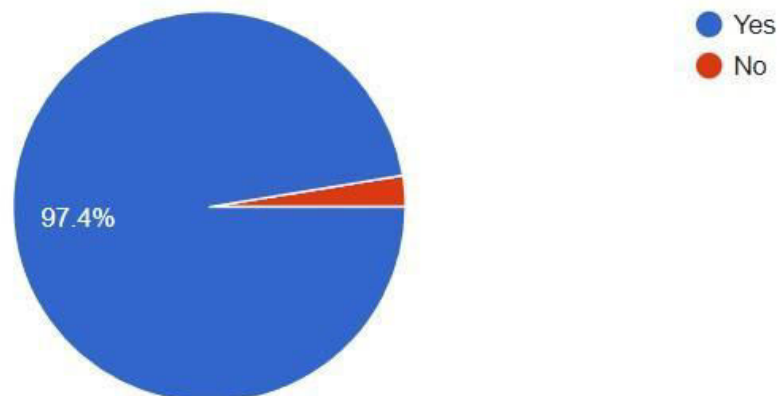
3.

Do you invest?

113 responses
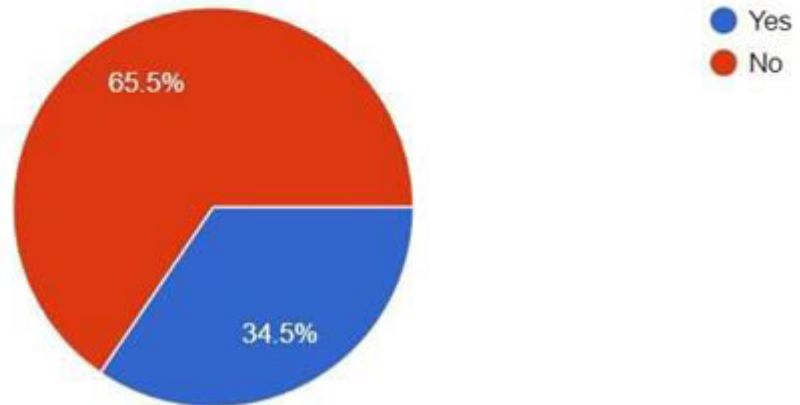
4.

How often do you invest?
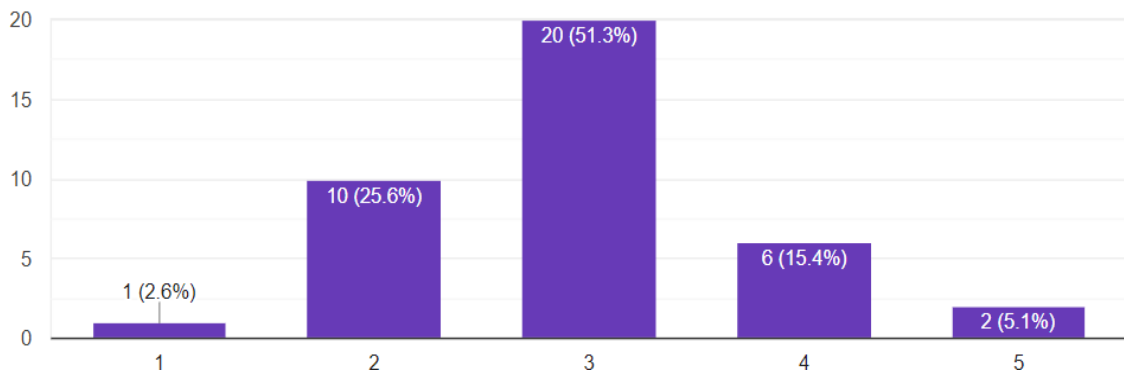
39 responses

5.

In what avenues do you prefer to invest?
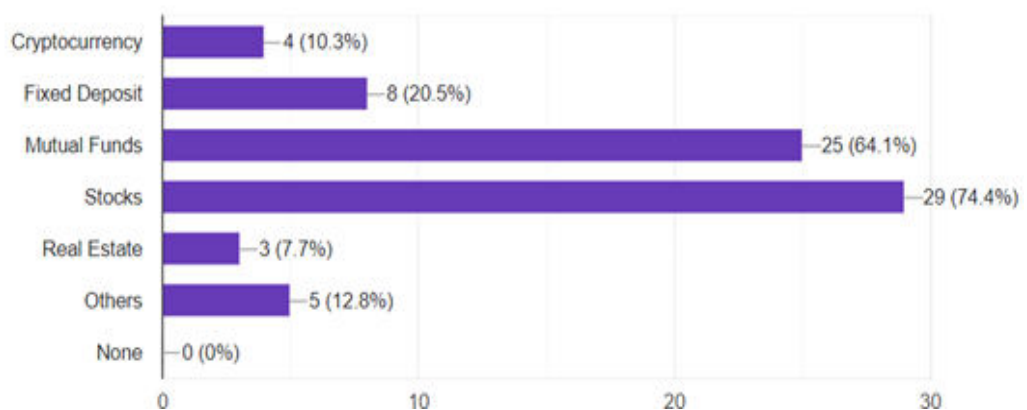
39 responses

6.

Who/What is your main source of awareness for investing?

39 responses

Source	Value
Social-Media	20 (51.3%)
Friends & Family	23 (59%)
Newspapers and Magazines	10 (25.6%)
Others	10 (25.6%)
None	0 (0%)
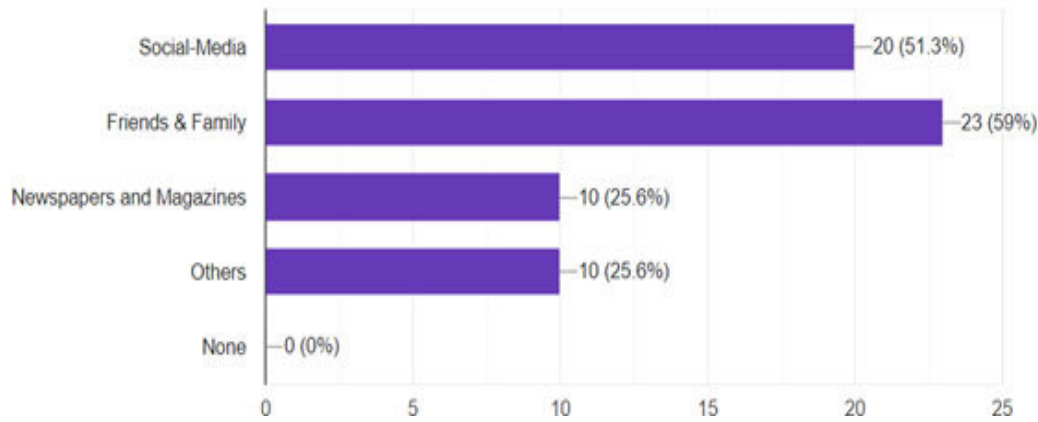
7.

Have you faced/seen anyone facing Financial Losses because of his/her dependence on Social Media for Investment decisions? If yes, did it had any effect on your trust on social media influence?

39 responses

- Yes — 51.3%
- No — 48.7%
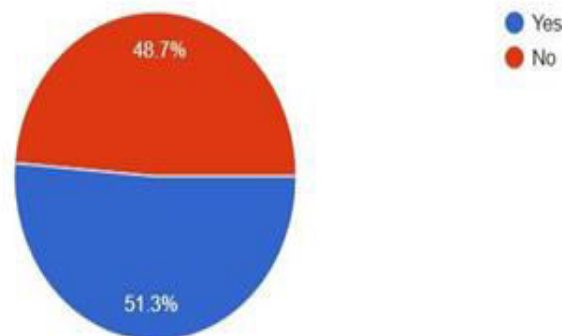
8.

What are the financial goals you associate your investment with?

39 responses

Goal	Value
Financial independence	27 (69.2%)
Higher education	8 (20.5%)
Navigation/exploration of the m...	9 (23.1%)
Extra source of income	28 (71.8%)
Better standard of living	15 (38.5%)
Supporting family income	9 (23.1%)
Dream home	6 (15.4%)
Dream car	5 (12.8%)
Hobby	6 (15.4%)
Other	2 (5.1%)
None	0 (0%)
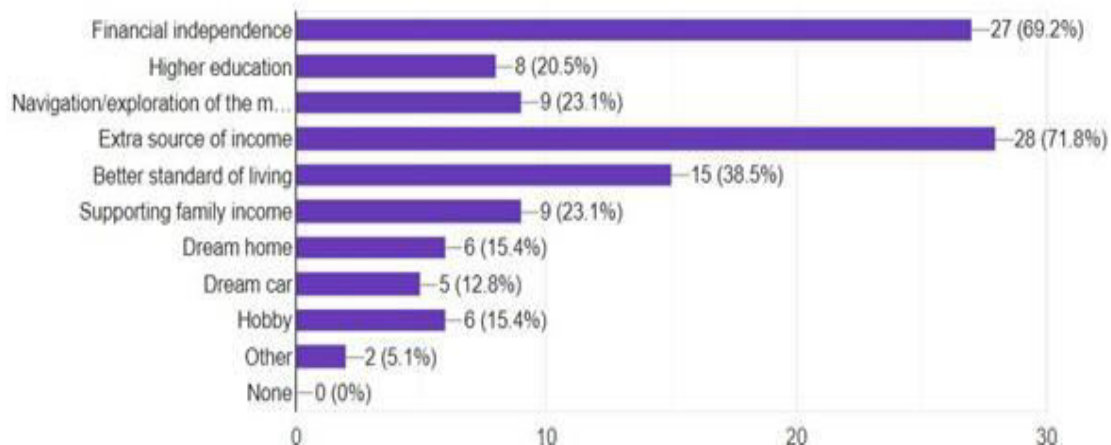
9.

Which Specific type of content influences your decision the most?

Copy

39 responses

- Reels
- Detailed Videos
- Articles
- Blogs

Articles 28.2%, Detailed Videos 30.8%, Blogs 12.8%, Reels 28.2%
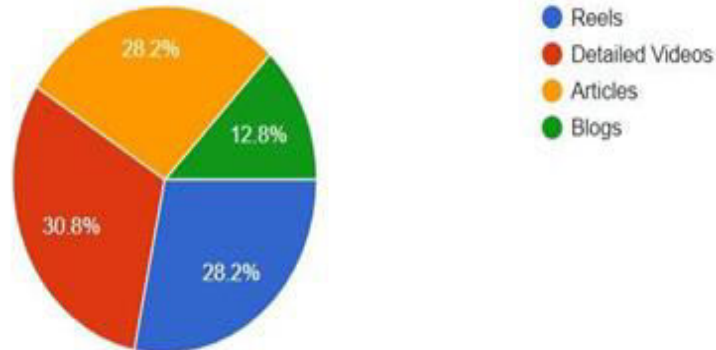
10.

Has social media helped you to assess your personal Financial Goals?

Copy

39 responses

1	7 (17.9%)
2	10 (25.6%)
3	18 (46.2%)
4	4 (10.3%)
5	0 (0%)
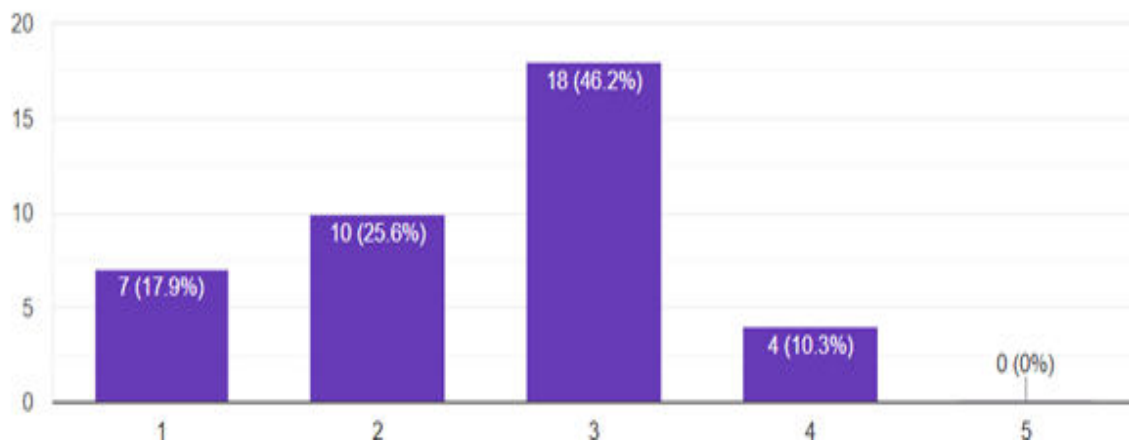
11.

Do you feel confident when others are investing in the same avenue as yours?

Copy

39 responses

- Yes
- No

Yes 84.6%, No 15.4%
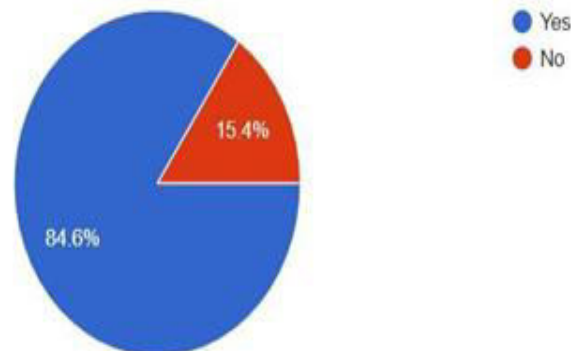
12.

Rate the role of social media in stimulating your investment decisions.   Copy
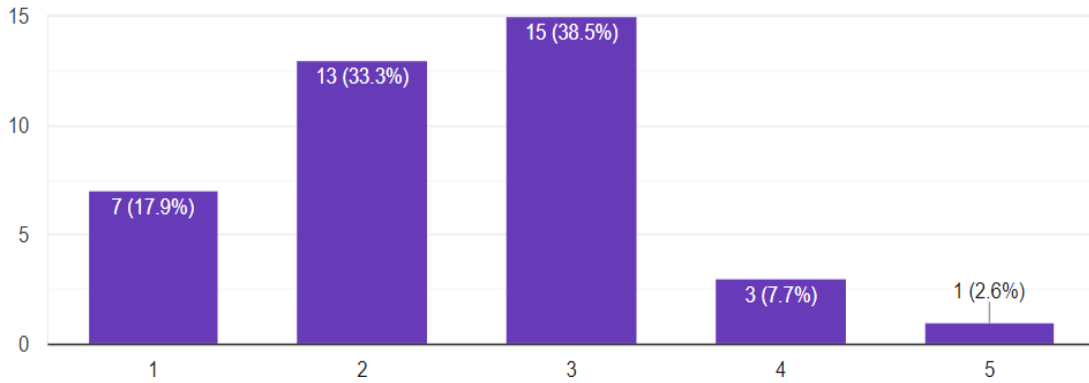
39 responses

13.

To what extent do you depend on Social Media for your investing decisions?   Copy

39 responses
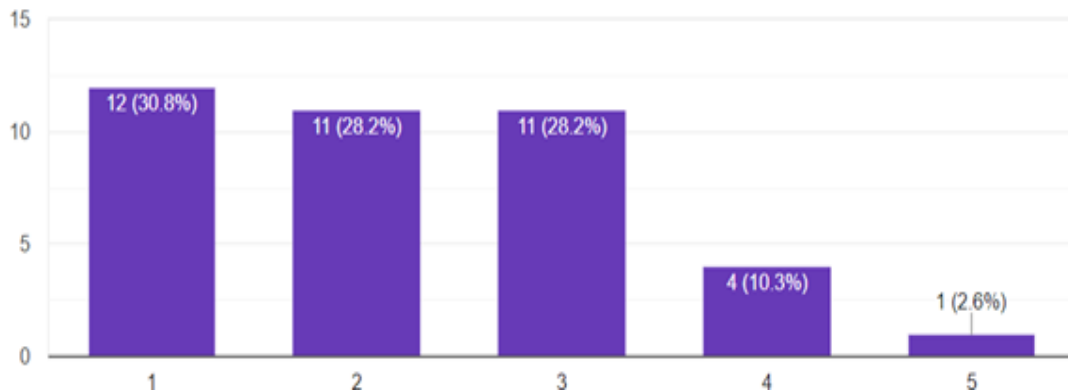
14.

To what extent do you find the impact of social media in your investment decision advantageous?   Copy

39 responses
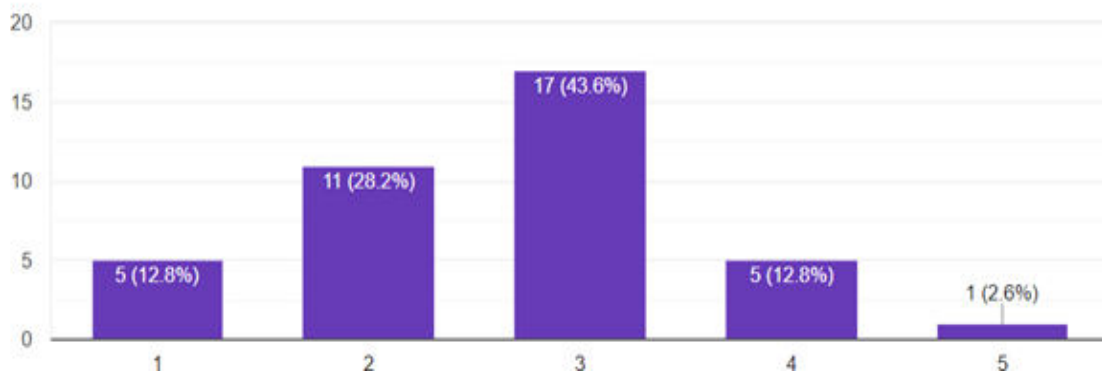
15.

To what extent do you trust the information you receive from Social Media?
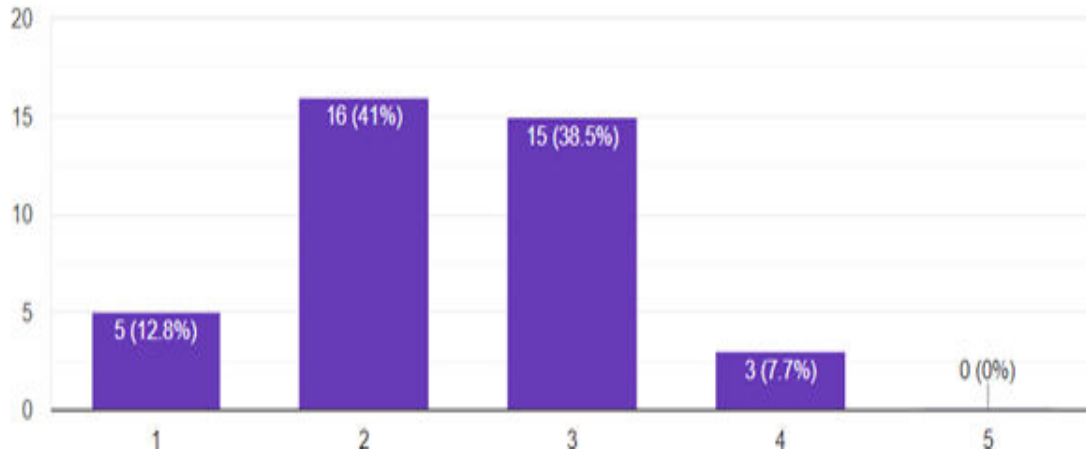
Copy

39 responses

16.

According to you, how instrumental is social media in driving your peers into investment decisions?

Copy
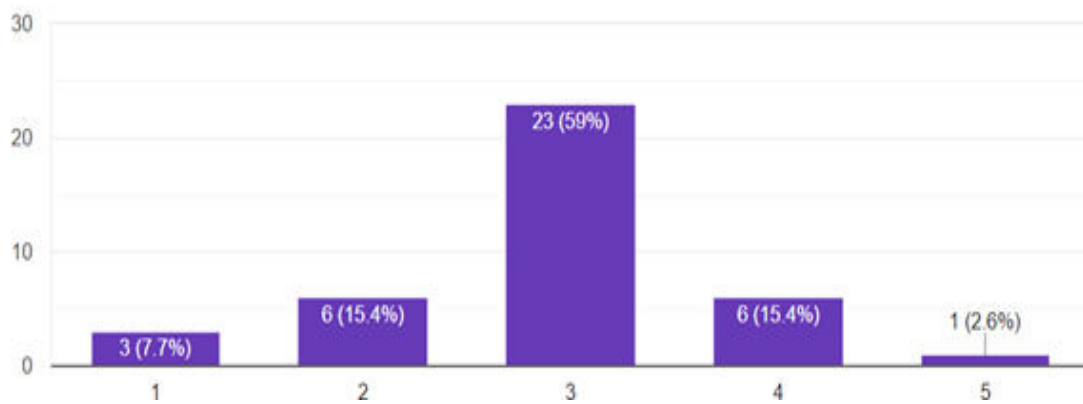
39 responses

17.

To what extent do you trust the information you receive from Social Media?

Copy
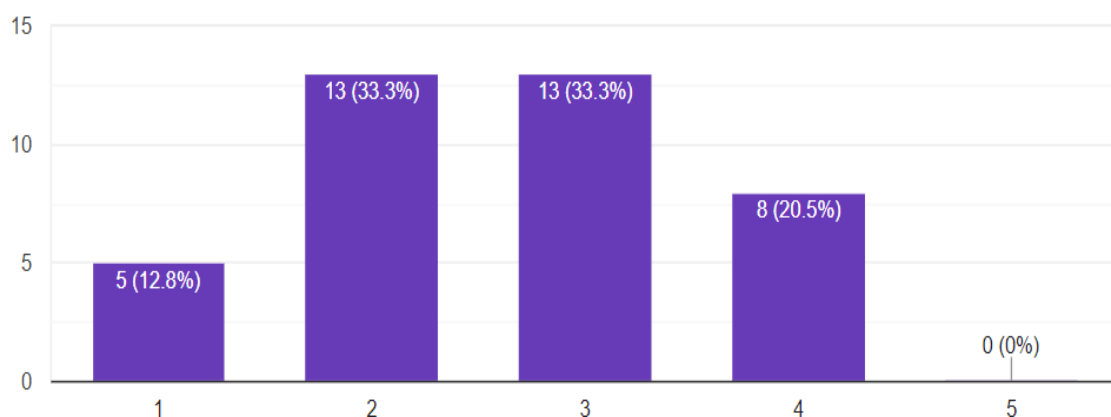
39 responses

18.

Are you comfortable to share your personal experience/advice/suggestion on your Social Media Platform?

Copy
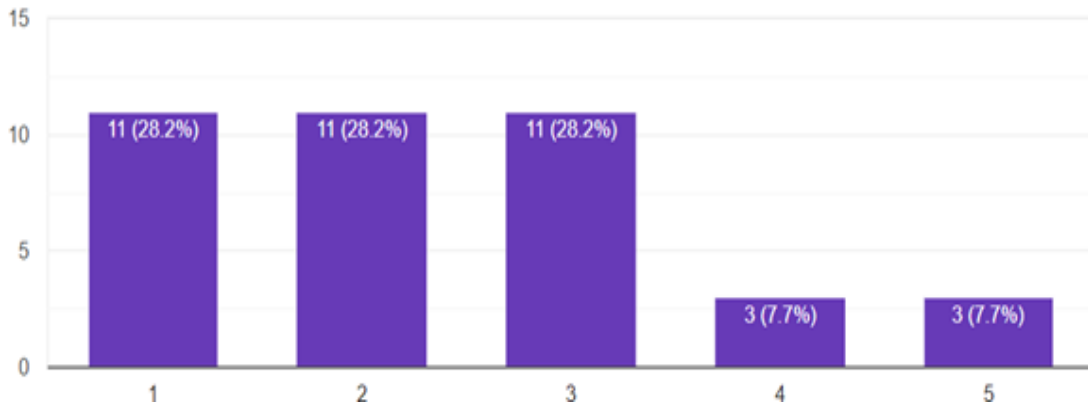
39 responses

19.

What is your time horizon for achieving financial goals how does that impact your risk tolerance?

39 responses
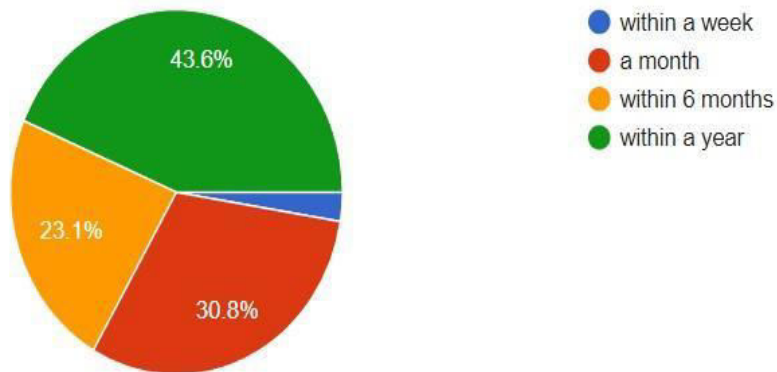
20.

How does that impact your risk tolerance?

Copy
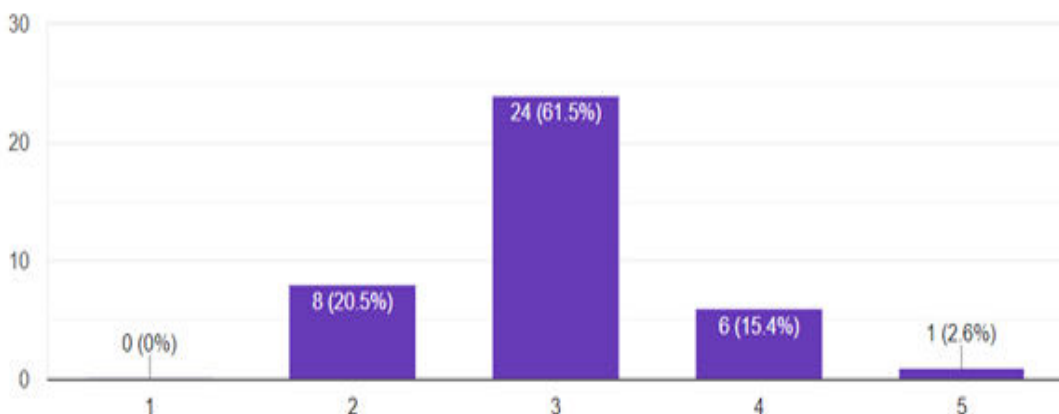
39 responses

21.

How much potential loss are you willing to tolerate in your portfolio?

39 responses
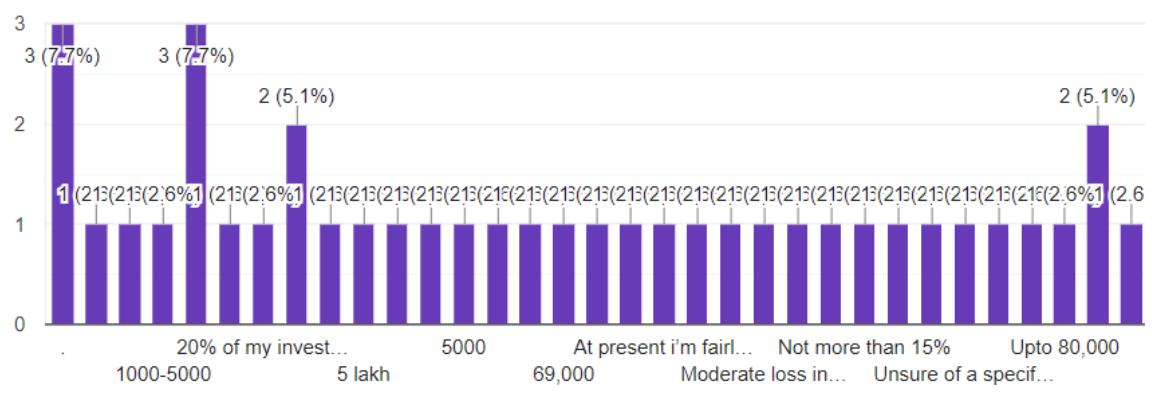
22.

Do you sometimes feel like buying a share based on it's attractiveness and desirability?

39 responses
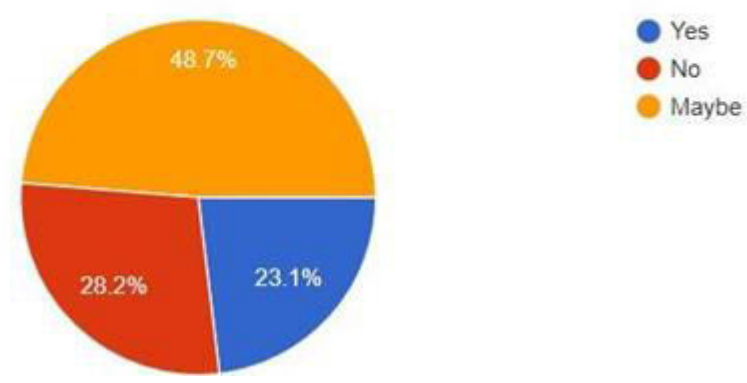
DESCRIPTIVE STATISTICS:

112 responses were obtained by circulating a questionnaire. Based on the data in Table 1.1 we can infer out of the total response only 39 individuals invest actively.

We observed the propensity to invest is more in men compared to that in females.

In what avenues do you prefer to invest?

39 responses
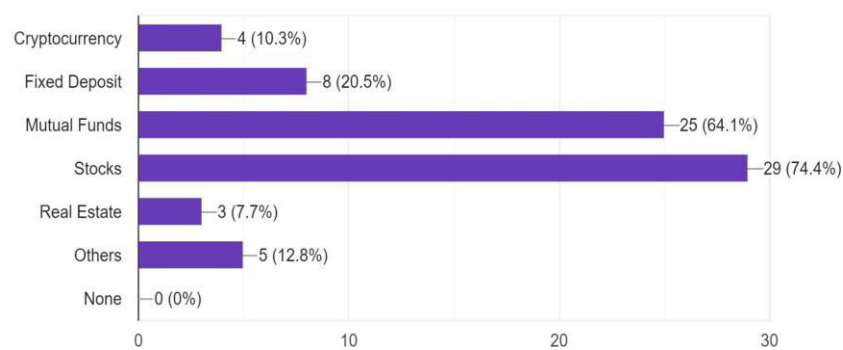
Figure 1.2

According to our survey, Stocks and Mutual funds emerged as the most preferred source of investing avenues. This can be attributed to the reason that Gen-Z have limited capital to invest and majority of them want to multiply the amount in a limited time frame.

Who/What is your main source of awareness for investing?
39 responses
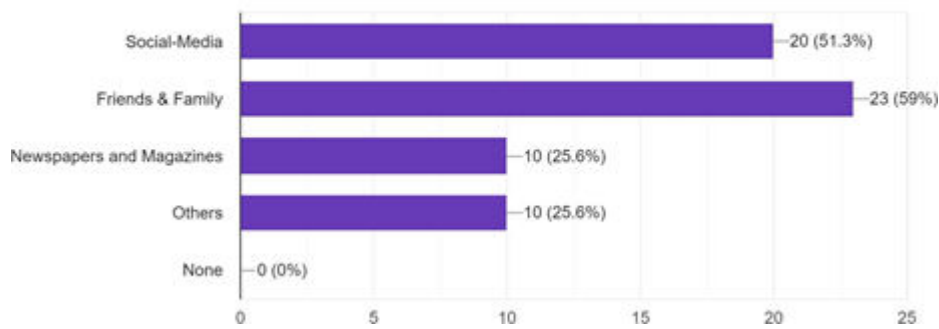
Figure 1.3

Most of the respondents opined Family and Friends to be the main source of awareness.

However, Social Media too plays a significant role as 51.3 percent of respondents acknowledged its role.

Which Specific type of content influences your decision the most?
39 responses
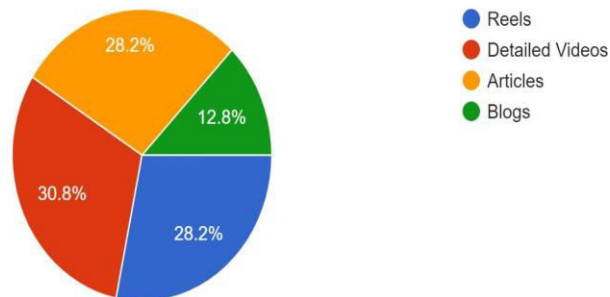
Figure 1.4

Our respondents were scattered in their opinion on the type of content influencing their decision the most. However, Video and reel, i.e, visual medium got more responses than written medium.

To what extent do you find the impact of social media in your investment decision advantageous?
39 responses
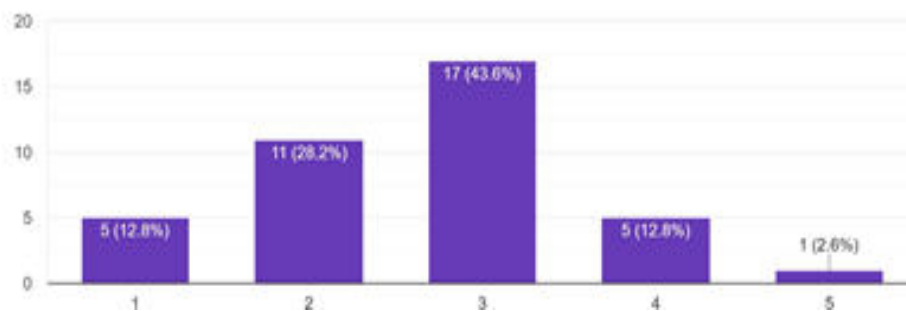
Figure 1.5

Rate the role of social media in stimulating your investment decisions.
39 responses
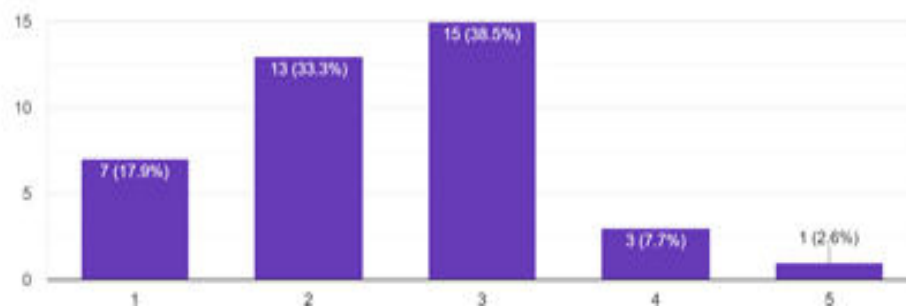
Figure 1.6

According to you, how instrumental is social media in driving your peers into investment decisions?

39 responses
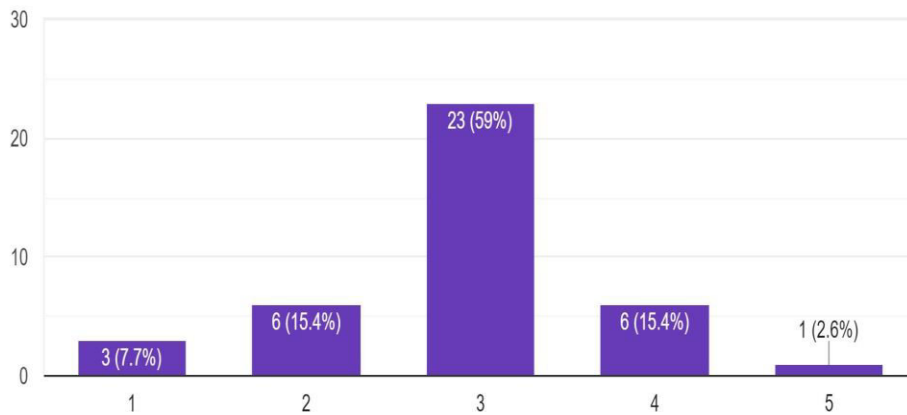
Figure 1.7

In (Figure 1.5,1.6,1.7) we can observe that most of our respondents have decided to stay neutral. There is however a hesitancy towards social media in regard to investing decisions.

HYPOTHESIS TESTING:

Contingency Tables

Gender	Do you invest?		
	No	Yes	Total
Female	44	13	57
Male	28	26	54
Prefer not to say	1	0	1
Total	73	39	112

χ^2 Tests

	Value	df	p
χ^2	8.39	2	0.015
N	112		

According to the results of the survey, we have received a significant P value of 0.015 (<0.05). Therefore we can interpret that there exists a financial awareness in Gen-Z. Therefore the Gen-Z indulgence with social media has helped them to be financially aware.

One-Way ANOVA (Non-parametric)

Kruskal-Wallis

	χ^2	df	p	ε^2
Do you invest?	8.31	2	0.016	0.0749
Has social media helped you to assess your personal Financial Goals?	3.82	1	0.049	0.1006

Further, we used Krusker-wallis non-parametric One-way Anova test, we ascertained significant P values as 0.016 (<0.05) for Ho1 and 0.049 (<0.05) for Ho2.Thus it can be interpreted as Social media plays an active role in creating financial awareness in the Gen-Z population. Social media helps youths in ascertaining their financial goals. Therefore, we can assess that constructive use of social media can facilitate the financial improvement of the Gen-Z population.

Practical Implications:

Financial literacy should be promoted among Indian citizens, particularly the Generation Z generation, since they are the ones who have recently begun to earn an income or will do so in the near future. The long-term benefits of investing a portion of Gen Z income in the capital markets will benefit them as well as the country.

Generation Z's Investment Interests:

- Capture attention through visually appealing content.

- Highlight relevance of investment-related information.

- Deepen interest through valuable content on investment opportunities.

- Tailor messages to resonate with Generation Z's preferences.

CONCLUSION: (OVERALL RESEARCH CONCLUSION)

According to our survey, out of 36 respondents who invest, 75% of them invest in stocks and 66.7% of them invest in Mutual funds. However, it has been observed that 22.2% also invest in Fixed deposits. Therefore, we can infer that a considerable part of the Gen-Z population is diversifying their financial portfolio.

There is a need to promote financial literacy among Indian citizens, particularly the Gen Z generation, because they are the ones who have recently begun or will soon begin earning an income. If Gen Z starts investing some part of their income in the capital markets, Early investment will be good for them as well as for the country in the long term.

However, there are still few who adopt financial planning activities (score 2.42 on a scale of 5). According to Gina Chong et al. (2022), Asia's younger generation spends a lot and saves little, because they believe they can earn money, while also being aware that their parents have savings. They also have a low level of financial planning literacy but have a high level of expected benefits. However, on the other hand, according to them, the effort that must be expended to carry out financial planning is also high. Furthermore, according to them, the condition of the financial planning facilities and ecosystem is high or good. From these various characteristics, they have a positive attitude towards financial planning.

RECOMMENDATIONS:

1. Financial Literacy must increase among the Gen-Z population. Our research identities social media as the most accessible tool for Gen-Z. Therefore, Social Media can play an active role in stimulating the young population toward investment decisions.

2. Most Gen-Z are risk averse, as they don't have a stable source of Income. Therefore, they hesitate to invest. The obscurity regarding their fear can be mitigated by motivation provided by Financial Influencers. Social media can be the best medium.

3. Because Gen Z is so engaged on social media, they share interesting financial content on popular platforms like YouTube, Instagram, and X (formerly known as Twitter). Make quick films, infographics, and interactive articles that offer insightful financial guidance, investing recommendations, and budgeting strategies. Also, influencer collaboration and relatable influencers effectively engage with the genZ and give advice as well as encourage them for financial awareness.

4. Develop web games or smartphone apps with a financial theme that educates money management skills. For

Generation Z, gaming can enhance the fun and interactive nature of learning about finance. Include components that will keep youngsters interested and inspired to study, such as virtual money, tasks, and rewards.

5. Gen Z values having access to streaming services. media whenever it's convenient for them. Organise podcasts or webinars covering a range of financial subjects, including financial planning, investing methods, saving, and budgeting. Ask successful young entrepreneurs, financial advisors, or industry professionals to appear as guests to offer their perspectives and helpful guidance.

6. Collaborating with educational institutions to offer lectures or workshops focused on financial literacy. Provide helpful guidance on setting up investment portfolios, and budgeting, Interact directly with youngsters to learn about their unique financial challenges and offer customised advice.

7. Create financial competitions or challenges with attractive prizes that motivate Generation Z to get involved and educate themselves about finances. These challenges, which promote a competitive spirit while sharing financial knowledge, can include budgeting challenges, investing simulators, or entrepreneurial contests.

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Other Tools used:

https://chat.openai.com/ https://whimsical.com/ai/ai-text-to-flowchart https://quillbot.com/

MANUSCRIPT SUBMISSION

GUIDELINES FOR CONTRIBUTORS

1. Manuscripts should be submitted preferably through email and the research article / paper should preferably not exceed 8 – 10 pages in all.

2. Book review must contain the name of the author and the book reviewed, the place of publication and publisher, date of publication, number of pages and price.

3. Manuscripts should be typed in 12 font-size, Times New Roman, single spaced with 1" margin on a standard A4 size paper. Manuscripts should be organized in the following order: title, name(s) of author(s) and his/her (their) complete affiliation(s) including zip code(s), Abstract (not exceeding 350 words), Introduction, Main body of paper, Conclusion and References.

4. The title of the paper should be in capital letters, bold, size 16" and centered at the top of the first page. The author(s) and affiliations(s) should be centered, bold, size 14" and single-spaced, beginning from the second line below the title.

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Liu, W.B, Wongcha A, & Peng, K.C. (2012), "Adopting Super-Efficiency And Tobit Model On Analyzing the Efficiency of Teacher's Colleges In Thailand", International Journal on New Trends In Education and Their Implications, Vol.3.3, 108 – 114.

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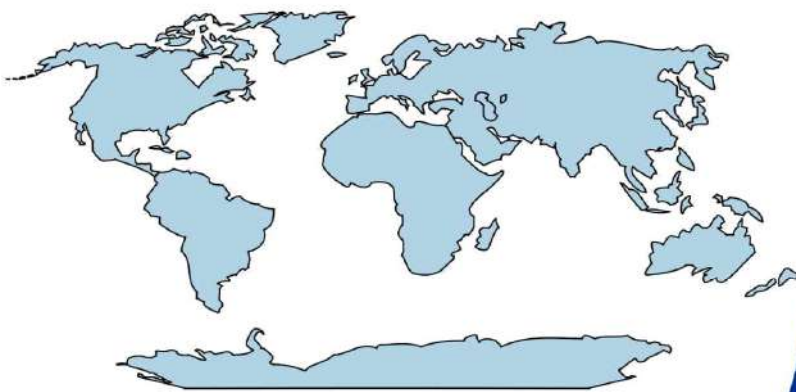
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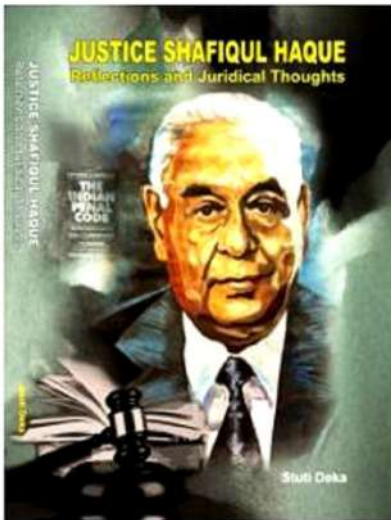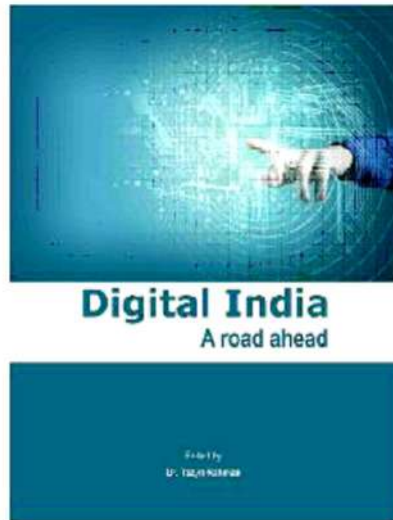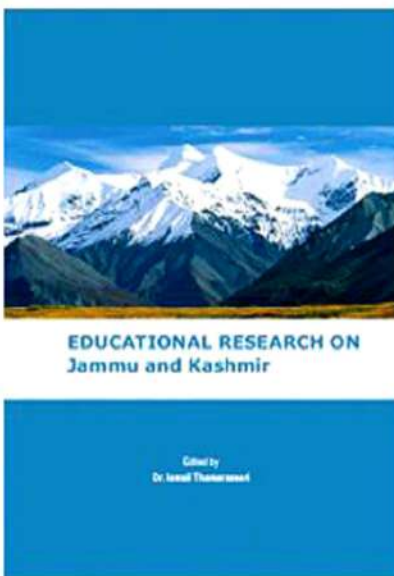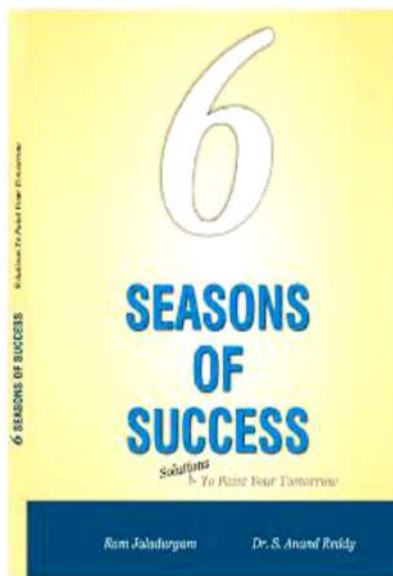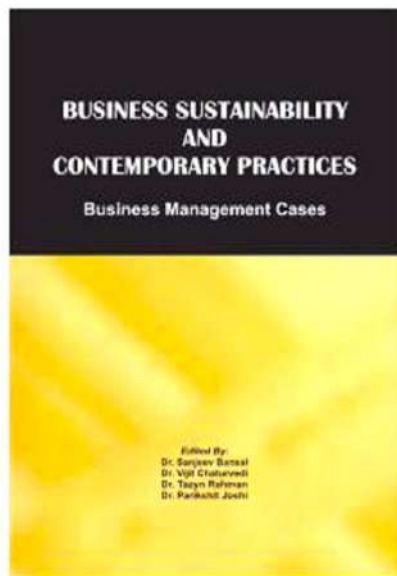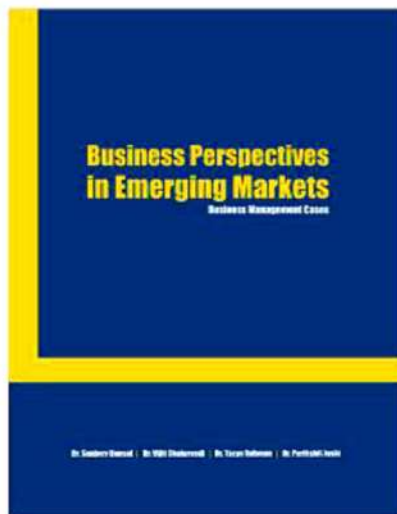
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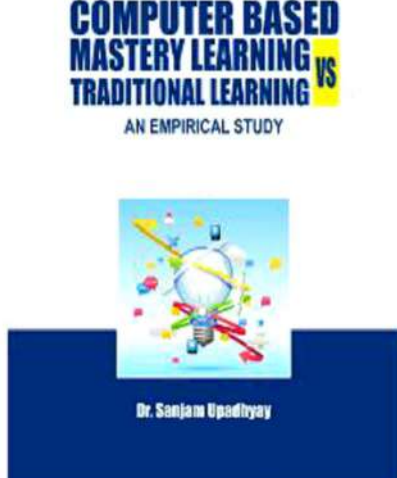
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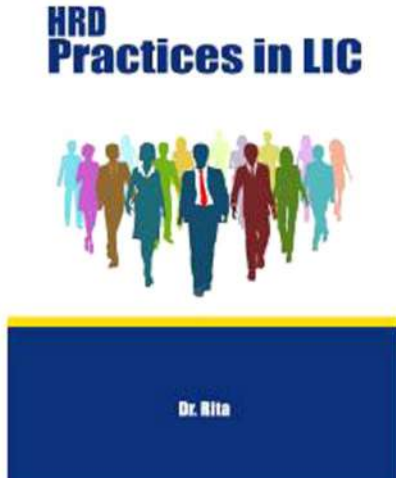
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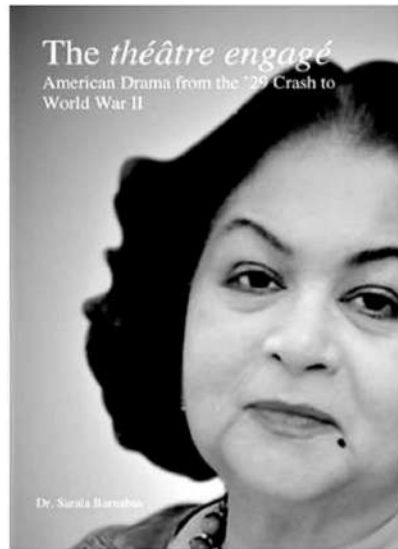
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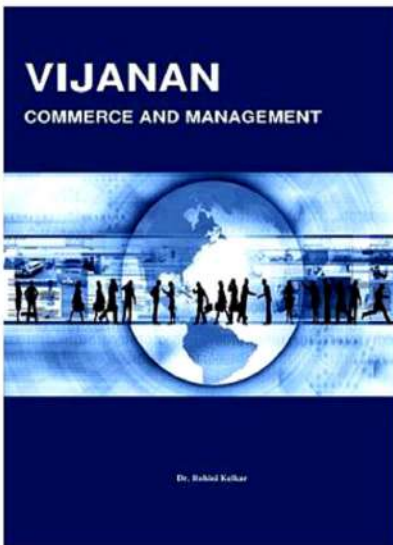
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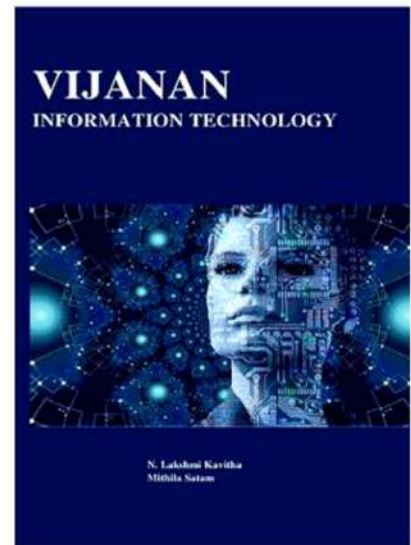
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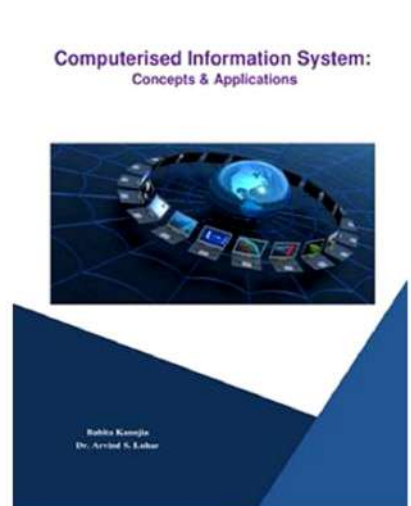
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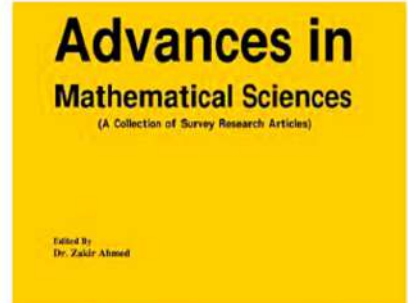
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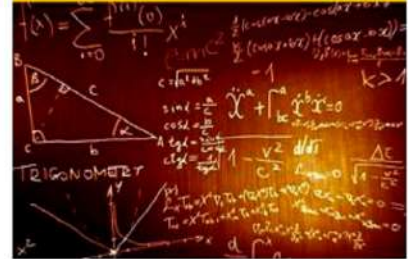
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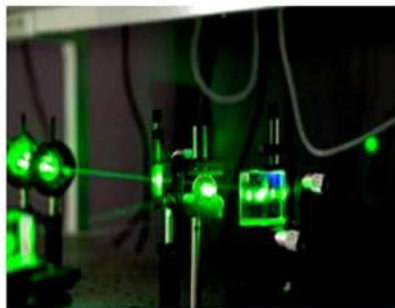
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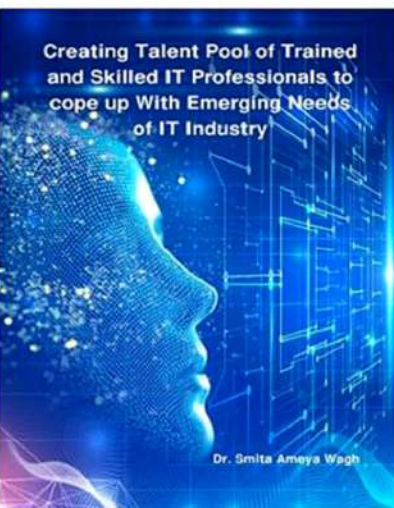
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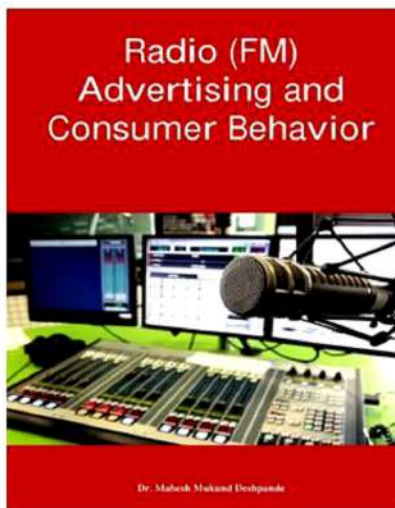
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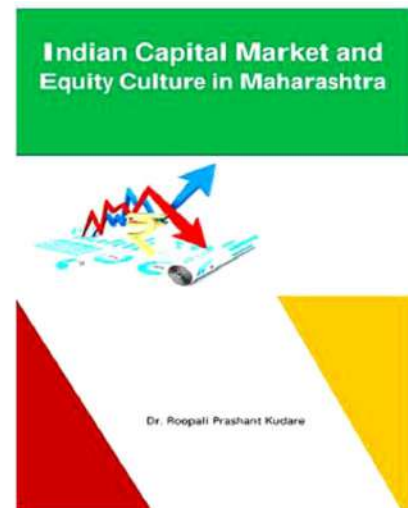
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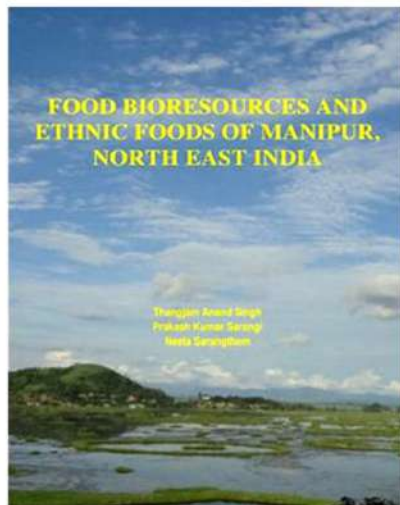
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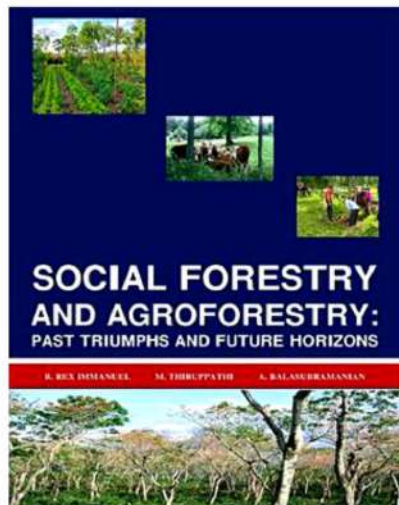
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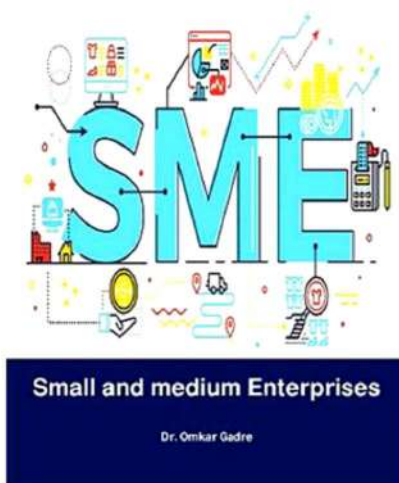
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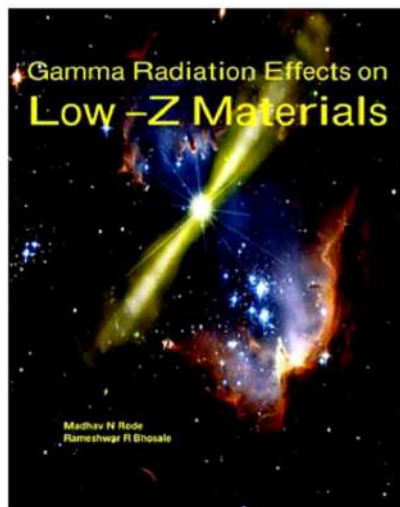
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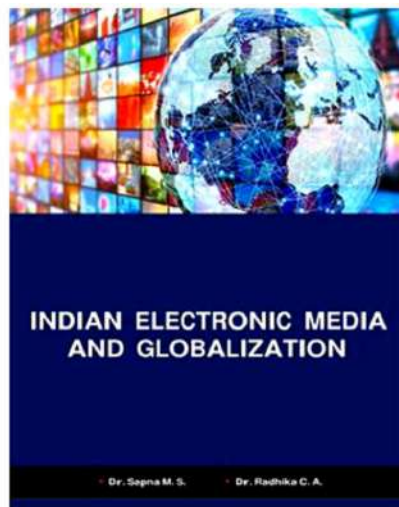
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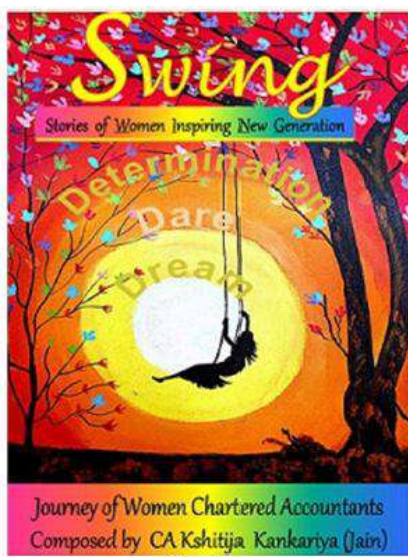
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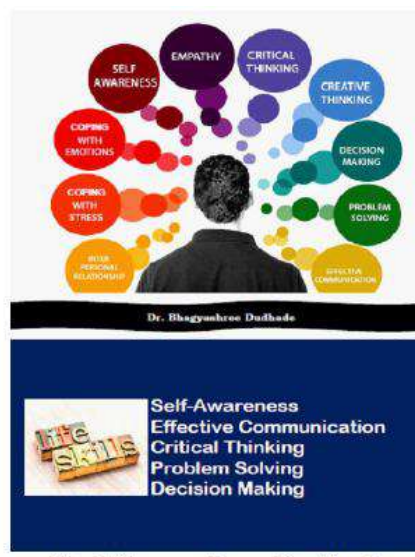
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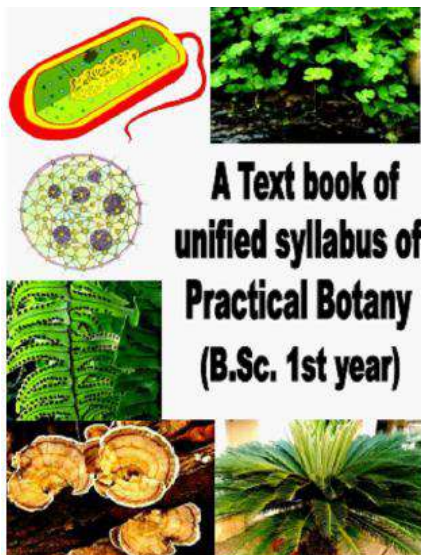
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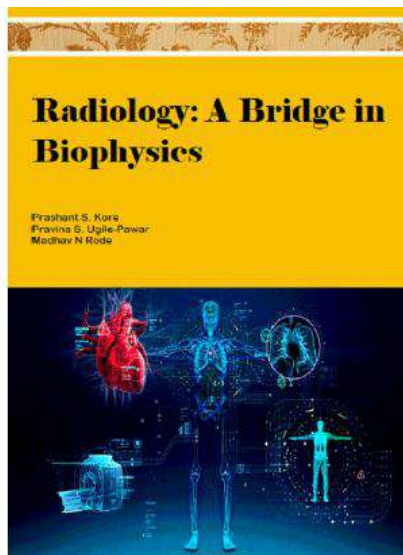
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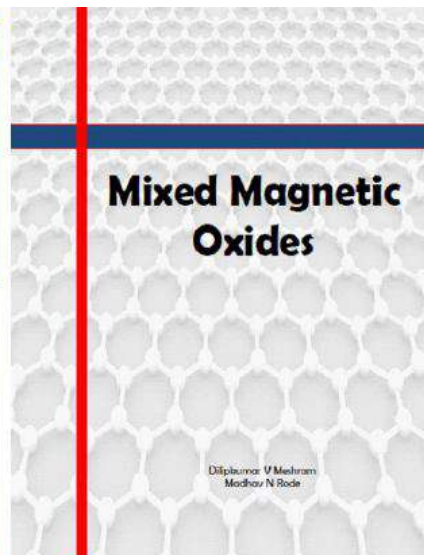
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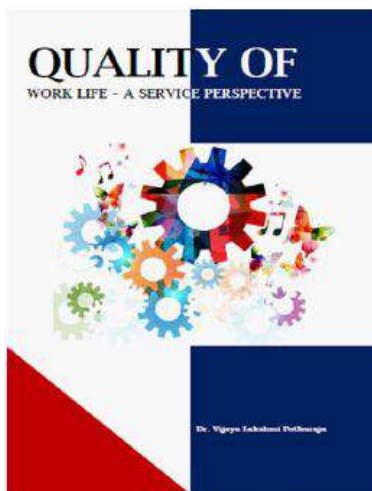
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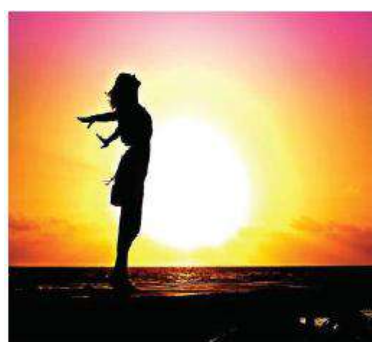
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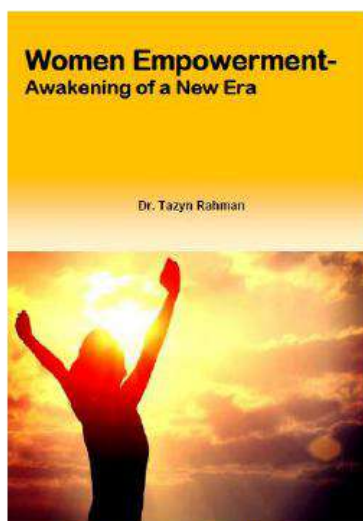
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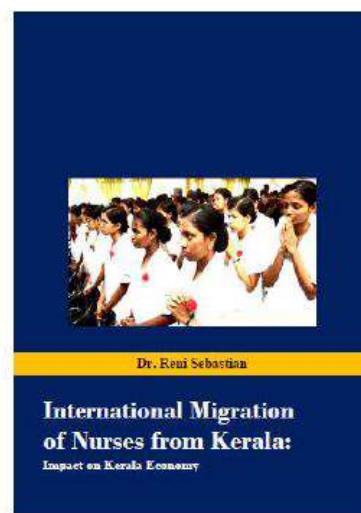
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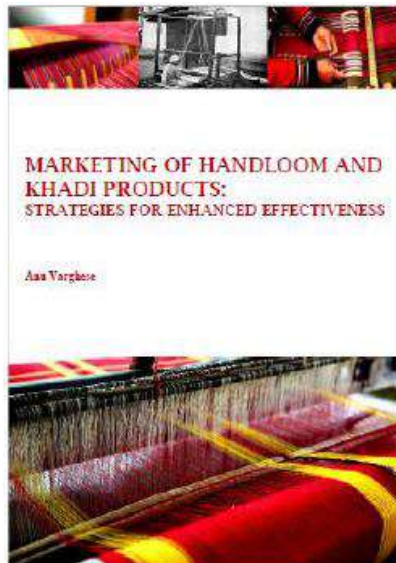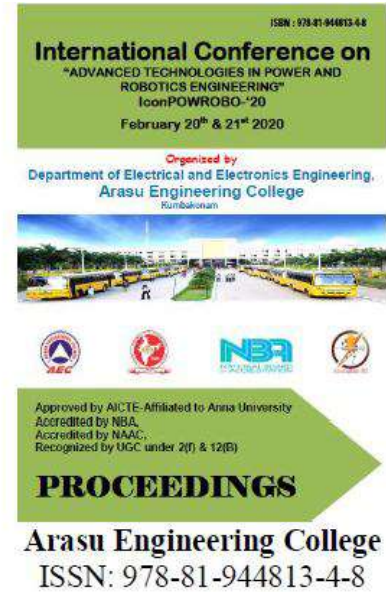**of Nurses from Kerala:**
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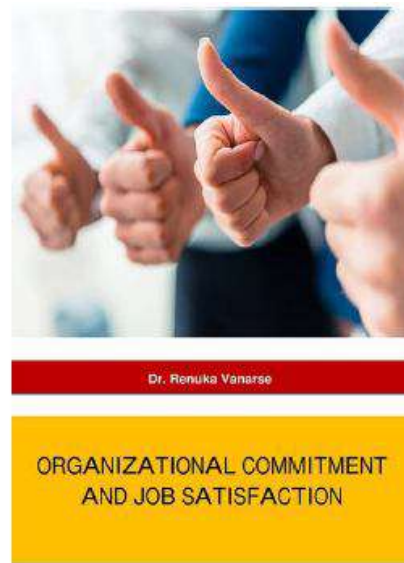
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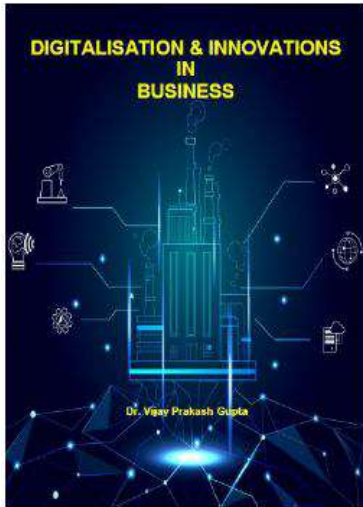
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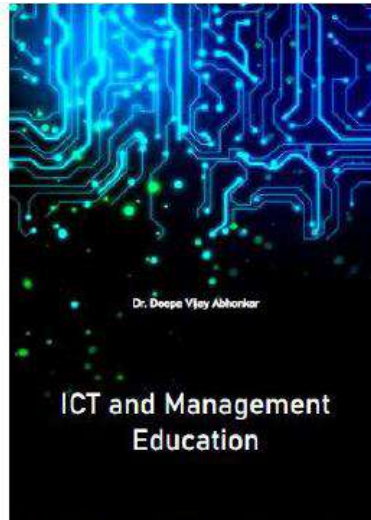
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