

A STUDY OF NON PERFORMING ASSETS AT RAJARSHI SHAHU SAHAKRI BANK LTD, KATRAJ BRANCH, PUNE

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ABSTRACT

The Co-operative banking sector is one of the principle accomplices of Indian Banking structure the co-operative banks have more rich to the ruler India., through their huge network of credit societies in the institutional credit structure. The co-operative structure have played key role in the economy of the country and always recognized as an integral part of our national economic-operative have ideological base, economy object with social outlook and approach. The co-operative covers almost cent percent village in India. The co-operative form of organization is the Ideal organization for economic weaker session in the country according to the recent study by World Bank and National Council for applied Economic Research.

Keywords: Co-operative Bank, Rural Development, Indian Banking, Credit Societies.

Introduction

The subject of research study is Non-Performing Assets (NPA) in Rajarshi Shahu Sahakri Bank Ltd. Katraj Branch, Pune. Today the foundation of the country financial turn of events and exchange is relying on banking and credit construction of economy.

The monetary construction is the establishment of credit and capital market of the economy. This is exclusively relying on the financial business in the country. The fundamental establishment at any bank is its store examples and Advances come from the stores which the public keeps in the bank consistently in a specific proportion and extent, no bank can allow credit more than its store structure.

Non-Performing Assets (NPAs)

Today NPAs are the matter of utmost concern in the banking sector or other financial institutions in India. Whenever a loan amount which doesn't meet the laid payment criteria of interest amount of EMI (Equated Monthly) payments are known as non-performing assets. NPAs can be further seen as commercial and consumer loans. Commercial loans become NPA when they are overdue for more than 90 days, whereas consumer loans become NPA when they are due for more than 180 days. Recently, there have been various cases by big corporate houses which are pending with the Indian Banks. Bhushan Steel is one such

example who defaulted on an amount of Rs. 56,022 crore, out of which only 63.5% (= Rs. 35,571 crore) has been realised so far.

Meaning of Non-Performing Assets (NPA)

Meaning of Non-Performing Assets (NPAs) has been well defined by RBI. RBI (Reserve Bank of India) is the central bank of India. Now, as per RBI, a non-performing asset is:

- An asset, that also includes leased asset when it stops accumulating income for the banks or financial institutions.
- A NPA is a loan or advance where:
 - Any interest or portion of the principal sum stays past due for a period longer than 90 days if there should arise an occurrence of a term advance.
 - The instalment of principal or interest thereon remains overdue for two crop seasons for short duration crops, the instalment of principal or interest thereon remains overdue for one crop season for long duration crops.
 - The portion of head or interest consequently stays late for two yield seasons for brief length crops, the portion of head or interest subsequently stays past due for one harvest season for long span crops.
 - The portion of head or interest consequently stays late for one yield season for long length crops.

- The measure of liquidity office stays extraordinary for over 90 days, in regard of a securitisation exchange embraced as far as rules on securitisation dated February 1, 2006.
- In regard of subsidiary exchanges, the late receivables addressing positive imprint to showcase worth of subordinate agreement, if these stay neglected for a time of 90 days from the predefined due date for instalment.

Types of NPA

Gross NPA

Gross NPA is the overall quantitative amount of all those loans that have gone bad debts. It is an advance which is written off, for which bank has made provisions, and is still in bank's book of accounts.

Gross NPAs Ratio = $\frac{\text{Gross NPAs}}{\text{Gross Advances}}$

Net NPA

Those NPAs in which, the banks have deducted the provisions regarding NPAs from the Gross NPAs are known as Net NPAs.

Net NPA = Gross NPA – Provisions

Assets Classification

Assets can be classified into 3 types:

Standard Assets

Those assets which are not facing any problem and are not of more risk towards the customer are known as standard assets. These standard assets are measured as performing assets. A 0.25 percentage general provision is must to be providing on basis of global loan portfolio.

Sub-Standard Assets

Any asset which is remained NPA for a period less than or equal to 12 months is classified as sub-standard asset. A general provision of 10% on outstanding has to be provided on sub-standard assets.

Doubtful Assets

Those assets which have remained NPAs for a period outperforming a year and which are not adversity advance. As indicated by RBI, it is must for banks to work with 100% of unsound proportion of approaching development.

Reasons behind NPAs

There are several reasons for a loan asset account becoming a NPA asset. It is very important for a banking sector to flourish; otherwise it directly impacts the economy and the financial power of the country. The increasing non-performance assets are nothing but failure of the banking sector which also indirectly affects the other sectors. Earlier, the Indian banking sector was being operated in a closed economy but since when it has been open to the economy, it has faced various challenges.

The increasing NPAs is the net result of this situation and which costs the banks so much and finally it leads to the higher cost of the banking services. One of the main reasons behind the increasing NPAs is the prescribed percentage of credit of the banking sector to the priority sectors. And this percentage is too high, i.e., 40 percent. Indian banking sector doesn't face lack of stringent norms but rather they face various legal impediments and time consuming asset disposal process.

This NPA problem is not new, and has been existing for more than decades. It was year 1989-1990, when the Prime Minister VP Singh at that time, had given a huge waiver of Rs. 15,000 crore for the rural loan accounts, this didn't help much, but this left a very negative impact in the payer and the borrower, as after that the payer didn't use to feel obliged to pay their debts, and this negatively affected the Indian Banking Sector.

There are two factors for a loan account becoming a non-performing assets, internal factor and external factor. Internal factors are related to the funds and the borrower like when the funds borrowed for any particular purpose is not used for that purpose or when that purpose or project is not completed within the stipulated time. This creates the situation of non-payment of loan assets. Apart from this, business failures and diversions of funds for doing other things also cause the situation of NPAs. Well, all these situations occur because of the borrower and their projects. Also, willful defaults, siphoning of the borrowed funds, frauds, loan disputes and misappropriation are the additional reasons.

On the other hand, internal factors also include the deficiency on the side of the banks, when the banks fail to monitor the loan assets, and delay in follow-ups with the borrower for settlement of the loan accounts.

External factors are other factors that are due to policies, environmental, legal and social factors. Sluggish legal system is one of the major external factors as there are never ending disputes and lack in sincere efforts by the legal system to settle the disputes. And the government policies like excise and import duties affect the banking sector. Also, the industrial recession and shortage of raw materials, power and other resources are the major reasons for the increasing NPAs.

Impact of NPA

The increasing NPA in the banking sector of India, not only minimizes the profitability of the banks but also impacts the credibility of the banks. This massive amount of increasing NPA in the commercial banks is eroding the maximum of the capital base of the public sector banks. If the banks start making losses, it starts destabilizing the confidence of the customers (depositors) of the banks. And if the depositors lose confidence in their banks, they will start withdrawing their money from the banks, which would lead to the collapse of the banking system. This is why it is very important that non-performing assets must always remain within the minimum limit so that the sustainability and stability of the banks doesn't get disturbed

This is not the only impact NPAs causes. Also when NPAs increase, it forces banks to decrease the interest rates on the saving deposit accounts to increase the margin of profitability of the banks. NPAs cause long term threats to the banking sectors with respect to its stability. Recently after demonetization, it was noted that the profitability of the manufacturing sector reduced, which prompted the banks to stop the credit growth of the industrial sector. The shortage of funds due to NPAs affected the growth of the industrial sector. This continuous reduction of availability of credit is not only harmful for the industrial sector, but also for overall economy.

Increasing NPAs lead to the shrinking of availability of credit to the public, and hence the funds are not available to the public at large and mainly for priority sectors, which in turn halts the economic growth and industrial sector. Only when credit is available to the public in excess through banks, then only new entrepreneurs could establish new companies, which in turn would generate employment and will lead to a better and robust economy. Hence, it is very important that banking sectors be stabilized and NPAs should be controlled through its effective management.

Review of Literature

Neelam S. Pandya (2019) this is the time of change exceptionally directed to progression, public sector to private sector and shut economy to globalized economy. This is the new beginning time of new private sector banks and unfamiliar banks. The review is centered on gross NPA to net advances and net NPA to net advances. Its covers the exploration time of 20 years in the wake of banking sector changes began..

Ms. Arshiya Mubeen Non-performing assets (2019) (NPAs) are bad debts for banks and they have become headache while declaring net profit. In this study the growth of NPAs among public sector banks had been described. Syndicate Banks NPA for a period of five years have been analyzed in this paper. Some suggestions were given for banking professionals which should be considered before sanctioning loans.

Pallavi Singh Yadav (2019) A well-developed and financially strong banking sector is the backbone of the economic development of any nation. Banks mobilize the savings of the public by accepting deposits and disburse credit according to socio-economic priorities of the country. The public and private sector banks and most of the financial institutions are provided financial assistance in the form of advances to agricultural and industrial units, MSMEs and service sector, to run their businesses efficiently and to contribute in the economic development. It took almost 3-4 years for banks to come out of the 2008 financial crisis that happened in the world economy and still, banks are facing issues like

NPA, which not only decreased the profitability of banks but also affect their smooth operations and goodwill. A drastic increase in NPAs is happening in public sector banks of India. Public sector banks are ruling the banking sector in concern of net worth, which is 70 percent of the banking system of India. In the mid of September 2018 gross NPAs of SCBs crosses the limit of nine lakh crores out of which 90% NPAs were in the public sector banks. State Bank of India and Punjab National Bank are leading in that. Although, Reserve Bank of India and banks themselves have taken numerous steps to solve the NPAs problem but it is still alarming in the Indian economy.

Banerjee et al. (2018) have inspected the situation with gross NPAs and net NPAs in private sector banks and public sector banks to concentrate on their impact on the resource nature of the banks. Purposeful advance defaults, helpless credit the executives strategies, endorsing of advances without dissecting the danger bearing limit of the borrowers are the fundamental explanations behind stacking up of NPAs. The banks should weight on better system definition and its legitimate execution also. Severe arrangements by the public authority could help in diminishing the degree of NPAs.

Mukhopadhyay (2018), in his paper, has examined about discovering answers for India's NPA hardships. He has proposed that to determine the issues of NPAs the RBI ought not maintain a solitary model; all things being equal, an imaginative and adaptable methodology is required for each influenced bank, which ought to contrast on made to order premise.

Kumar (2018), in her investigation has discovered that NPAs contrarily affect the productivity and liquidity of the financial area. As indicated by her assuming the issue of NPAs is overseen productively, numerous microeconomic issues like destitution, joblessness, and uneven characters of equilibrium of installments can be diminished, the currency market can be reinforced, and in this manner, the picture of Indian financial framework can be worked on in the global market.

Sharma (2018) emphasizes the job of the financial area as an instrument of monetary development and advancement. The paper talks about how banks are troubled because of increasing NPAs particularly in the event of public sector banks. The creator expresses various preventive estimates that would diminish the degree of NPAs. Reasonable administrative norms and opportune execution of them could prepare for a solid monetary area in India.

Dey (2018) in an extremely late exploration paper takes a gander at the recuperation part of recuperation of helpless advances of the Indian business banks. The creator views the job of DRTs to be vastly improved contrasted with the recuperation through LokAdalats and SARFAESI Act.

Kumar et al. (2018) make a fascinating review to discover the primary explanations for amassing NPAs. They observe the principle motivations to be modern infection, change in government arrangements, helpless credit examination framework, adamant defaults and deformity in the loaning system.

Mishra and Pawaskar (2017) have suggested that banks ought to have a decent acknowledge examination framework to stay away from NPAs. They call attention to that the issue of NPAs can be tackled in case there is an appropriate lawful design to help the banks in recuperation of obligation.

Research Methodology

Objective of the Study:

Major objective of the research is to study the NPA and its types, different level of NPA in commercial bank and its remedies measures taken by the bank to decrease the NPA of the selected bank.

Sources of Data

The data collected for the preparation of this research is secondary data. The sources of data used for this research paper include the annual reports and literatures published by Indian Banks and Reserve Bank of India, various articles, magazines and journals. The data used

in this analysis is restricted to the past one decade, i.e., 2016-2019.

Research Design

For this research paper, Analytical Research method of research was used. Researcher has reviewed the NPA in selected commercial bank that include cooperative bank listed in the Second Schedule of the Reserve Bank of India Act, 1934. The data has been collected from the Annual Reports of various public and private sector banks, RBI press release, RBI notifications and RBI occasional papers. The

secondary data has been collected from various articles, magazines and research papers on NPAs.

Techniques of Data Collection and Analysis:

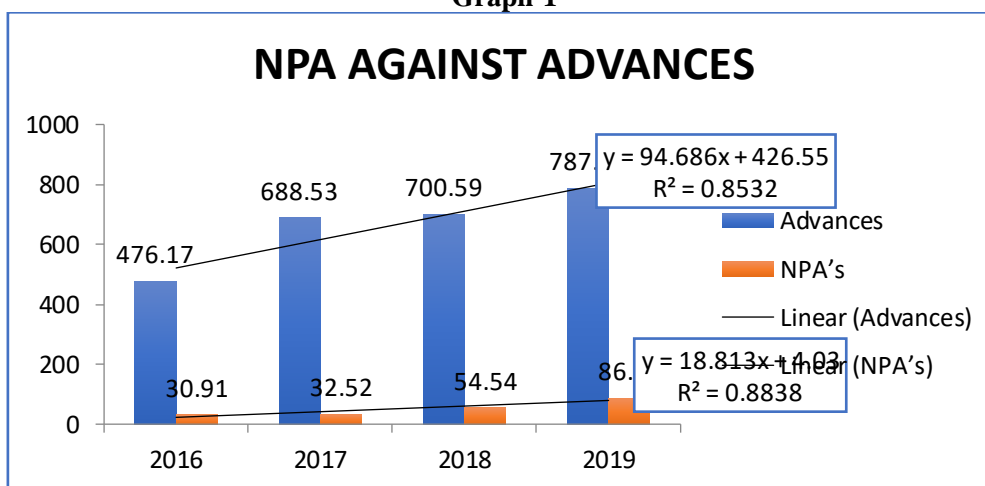
Simple technique of data collection has been used for this research paper. Data for this research paper has been extracted from various documents and records. The data obtained for this research paper has been analyzed using appropriate statistical techniques like averages, financial ratios, trend analysis and percentages.

Data Analysis and Interpretation

Table 1 NPA AGAINST ADVANCES (Rs. In.lakhs)

Year	Advances	NPA's
2016	476.17	30.91
2017	688.53	32.52
2018	700.59	54.54
2019	787.77	86.28

Graph 1



Interpretation

Checking out the development of the NPA to propel proportion the bank can have a thought regarding the amount of its loaning is paid off and what extent isn't so the bank can then intently screen the loaning design if it is stretching out advance to hazard project reasonable tasks whether it needs to build post observing etc& settle on the reception of legitimate danger the executives method and such measure so this apportion is more imperative to the bank then the NPA to resource proportion during the year 2016-17 The gross NPA to net advances of the bank is as on March 16. the net NPA to net

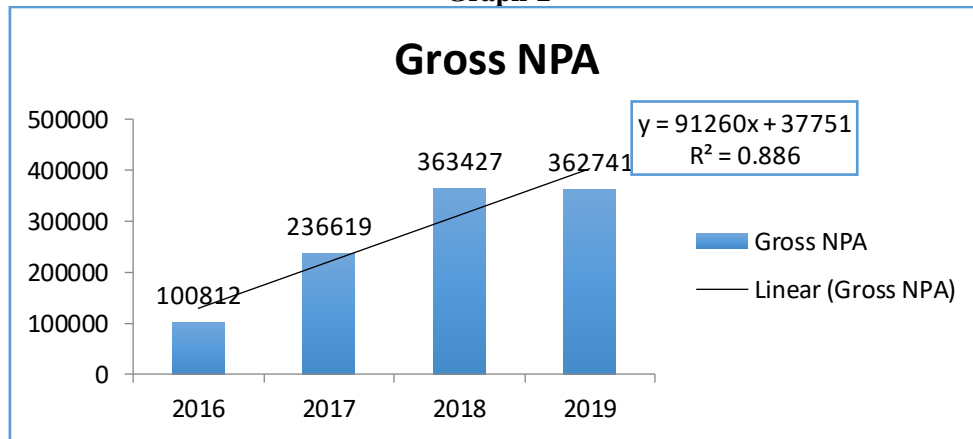
development has additionally improved from 32.52 as on 31st March 2017 to 86.28 as on March 2019 during the had been decrease of NPA to the sum recuperate 26.00

Here researcher use trend analytical to forecast NPA against advance for the future 2 to 3 yrs. Here researcher observe that linear trend line is fitted to the advance & NPA R^2 of advances is 0.8532 is greater than 0.8. So, it is best fitted trend line for advance also R^2 value for NPA is 0.8838 is greater than 0.8. So, it is best fitted trend line for NPA. By using linear equation researcher can forecast the NPA & Advance for the future few year.

Table 2 Gross NPA'S (Rs. In Lakhs)

Year	Gross NPA
2016	100812
2017	236619
2018	363427
2019	362741

Graph 2



Interpretation

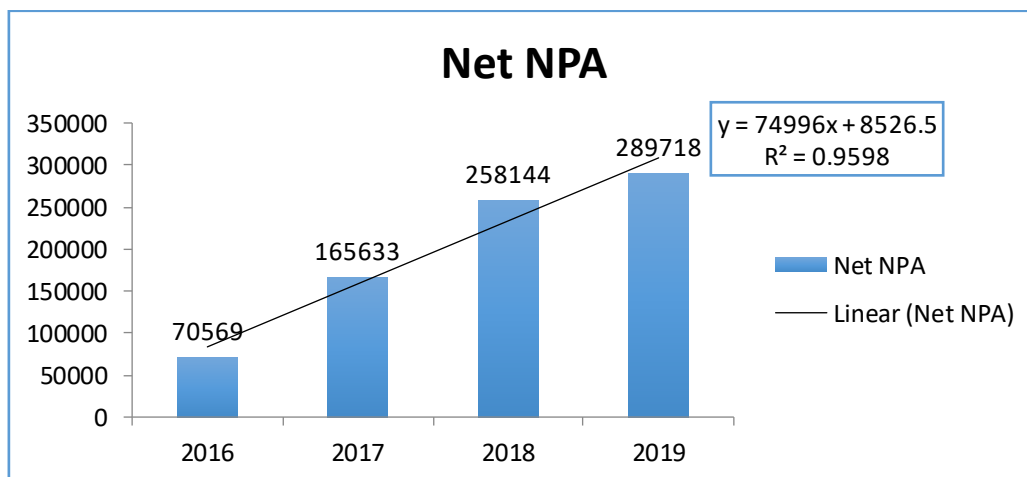
Here researcher has observed that Gross NPA is increasing. It was 100812 in 2016 and reached till 362741 in 2019. The highest

Gross NPA in 2018 i.e 363427. The trend of gross NPA is increasing linearly. The bank needs to control the gross NPA by implementing some guidelines to control it.

Table 3 Net NPA'S (Rs. In Lakhs)

Year	Net NPA
2016	70569
2017	165633
2018	258144
2019	289718

Graph 3



Interpretation

Here research can observe that Net NPA is increasing linearly. It was 70569 in 2016 till 2019 it became 289718. The highest NPA is 289718 in 2019. The r-square value of Net

NPA is 0.9598 shows that the given linear trend line is best fitted to the above data and researcher can forecast the future Net NPA trend by using the trend equation.

Table 4 Amount Recovered Through Various Legal Measures

Total NPA	7,84,064
Recovered NPA	4,57,000
Balance NPA	3,27,064

Interpretation

Total NPA is 7, 84,064 out of which 4, 57,000 is recover by One time settlement and SURFAESI Act. But still 40% of NPA recovery is balance due to some reasons.

- Loss of occupation or job after the advance or loan is approved
- Market condition; request and supply position additionally influenced the paying limit of the borrower.
- Demotion which bring about the bringing down of salary, at last influencing the installment of portion or principal sum.

Findings of the study

1. NPA against advance are increased from 2016 to 2019.
2. Gross NPA are increasing year by year & highest NPA i.e 3, 62,741 in 2019.
3. Gross NPA is increasing year by year because borrowers are not repaying their instalments on time.
4. Net NPA is increasing from 2016 to 2019.
5. 20% of comparison of Net NPA in the year 2016 & 2017.
6. The 60% amount of NPA recovers through One Time Settlement and Lok-Adalat.

Conclusion

The NPA have been a very big problem for the banking sector in India. This doesn't only affect the banking sector in India but also affects the Indian economy. The percentage of the NPAs to the loans has been increasing rapidly in both the private and public sector banks. Private Banks are also unable to decrease this ratio, but they are still better at managing their NPAs when compared to the public sector banks. Here researcher concluded that NPA is increasing of Rajarshi Shahu Sahakari Bank Ltd from 2016 to 2019. They have taken good remedial measures to recover the NPA like One Time Settlement, Lok-Adalat, Compromise Settlement, Recovery Camp etc. but the performance is not consistent.

Recommendations

1. Knowing a customer profile completely and setting up a credit report by paying successive visits to the customer and his specialty unit.
2. Appreciation list of borrower should be displayed in the banks premises which will motivate others to pay the amount on time.
3. Reminder Calls, Emails should be done to the borrower before the instalments date of his amount.

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BEST PRACTICES BLUEPRINT FOR INSTITUTIONAL DEVELOPMENT

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ABSTRACT

Master of Business Administration (MBA) programs influence the business and administrative sectors of modern organizations in important ways. Students are at the center of growth at all levels. MBA institutional approaches play an important role in exploiting student talents and preparing them for global competence. The annual reports of the Higher Education Institute (HEI), the National Assessment and Accreditation Council (NAAC) and the National Board of Accreditation (NBA), contradict further research into the best practices of private / privately funded MBA institutions in rural areas. Blueprint is a useful tool for keeping institutional development on track. The MBA Institute's work plan and best practices serve as a self-assessment tool for timely development. The plan is designed to help you achieve your goals. This paper focuses on the best practices. Private MBA-funded institutions are included in the research sample. The information is collected from secondary sources of websites approved by the NAAC. The NAAC compiled a list of best practices based on published research. Secondary data meta-analysis was used to determine best practices. The top ten practices have been established as a result. The ID is made using the concept of the parameter power. For each practice, five-year programs are recommended as programs. As a result, a total of ten plans have been developed and proposed for the healthy expansion of the MBA Institute. The purpose of this chapter is to highlight the many ways and means to achieve academic success. Its purpose is to suppress the thinking process of everyone involved in the growth of the institution. The guidelines can be a guide for private MBA institutions in rural areas of the country to implement the program.

Keywords: *Blueprint, Academic excellence, Best practice, MBA Institute.*

Introduction to Study

Innovation, disruptive business research, and product development, all of which, based on higher education institutions, have accelerated growth in the world's most active economy. Such institutions are a national asset, contributing to national prosperity and rural development at the grassroots level.

Successful institutions have strong links with local communities and industries, and contribute to the development and growth of the city, region, and country. It is well-known that business education has a profound effect on people's lives. For modern MBA institutions, creating an environment conducive to innovation and entrepreneurship is an important endeavor. In this setting, institutions should develop a strategic plan.

Review of Literature

IIT Bombay has developed a five-year strategic plan [1]. Based on the literature review of the program, the following objectives have been identified as priorities for the program, in addition to the broad range of activities undertaken by IIT-B to support its objective:

1. Increase public and business participation.
2. Increase educational opportunities
3. Improve internal support systems
4. Develop the learner's knowledge
5. Expand the financial base
6. Attract international students and professors
7. Extend information boundaries
8. Promoting diversity
9. Increase student involvement
10. Develop a clean and environmentally friendly compass.

The researcher takes this strategy and incorporates a purpose-focused approach to its research design. A large number of new MBA colleges have failed to provide quality education at a lower cost. The following are two important reasons:

1. They could not repeat the good habits of the high schools.
2. Because they have failed to meet the expectations of the participants, their seats are not fully seated. [2]

Systematic search for best practices, new ideas, and more effective work processes is known as recording plans. The purpose of this study is to identify and summarize the best practices used by privately funded MBA colleges.

Objectives

1. Determining areas that are critical to institutional growth where best practices are available.
2. Assess and evaluate the best practices of selected MBA institutions in accordance with their NAAC standards.
3. Propose a plan for best practices for institutional development over the next five years.

Research Method

MBA programs that want to know where they are regarding accreditation and testing should contact the NAAC. On its website, the NAAC also provides a list of best practices for MBA institutions, as well as their rating.

In this study, a three-part research strategy was used:

1. MBA programs offered by Higher Educational Institutes (HEIs) are being investigated.
2. Human-managed HEIs are being investigated.
3. Investigate NAAC-accredited tertiary institutions with grades A ++, A +, B ++, and B.

These MBA programs have made their Self Study Reports (SSR) available on their websites. SSR refers to the sample of literature selected for this study. Depending on the availability and availability of data on the respondent's website, a sample sample of 10 MBA institutions from each grade above was sent. As a result, a second set of 40 SSR data was tested.

In addition, the "best institutional practices provided under NAAC Criteria 7" are evaluated in six categories.

1. Institutional Management and Administration
2. Teacher Education and Research
3. Student Learning Guidelines
4. Campus Infrastructure and Resources
5. Learner reading and response rates
6. Access and consultation
7. Institutional Collaboration

Scope

The paper focuses on the MBA Institute Best Practices. Curriculum planning and design, teaching, learning, and assessment, research, innovation, and expansion, infrastructure and resources for learning, institutional and administrative management, and institutional separation practices are all intertwined with best practices.

Limitations

The analysis is based on secondary data available on HEIs websites in the form of SSR. In the sample, only complete SSRs are performed. Only slightly issued SSRs are not considered. NAAC SSR investigated. Although AICTE promotes NBA accreditation for MBA programs, NBA reports are not readily available on websites. In addition, a large percentage of MBA institutions are accredited by the NAAC rather than accredited by the NBA.

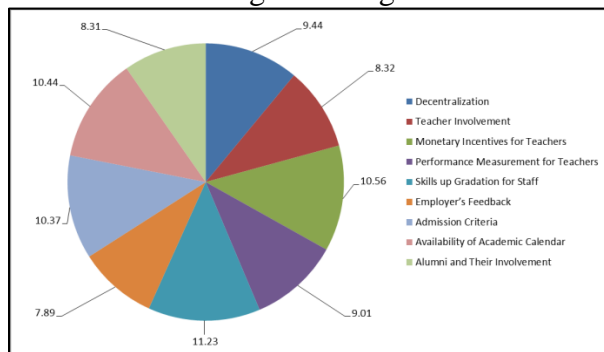
After a thorough review, NAAC publishes Best Practices on its website. The second detail refers to these topics..

Data Analysis and Interpretation

A] The following are the main areas where evidence and footprints of best practises can be found:

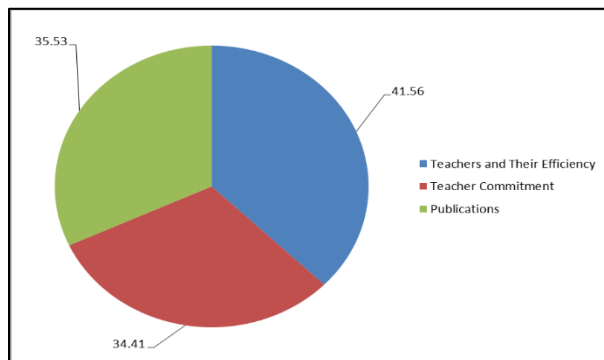
Institutional Governance and Management:

Graph No. 1: Practices with the Best Ratings/Rankings



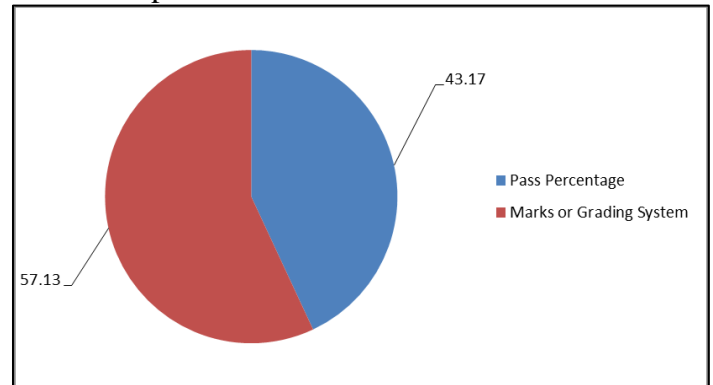
Source: Meta-Data Secondary Data

Graph No. 2: Top Rated/Ranked Practices in Teacher Education and Research



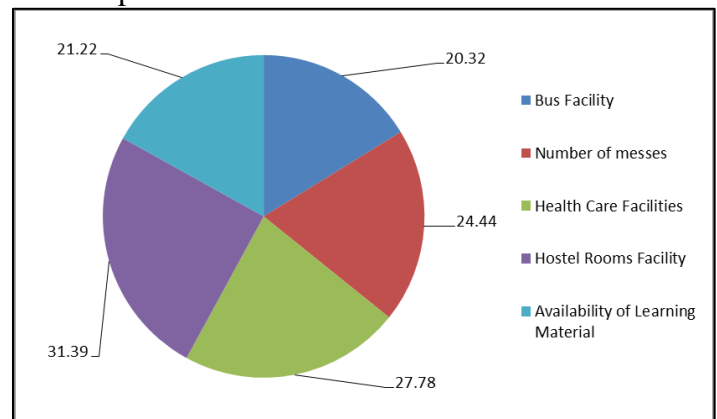
Source: Meta-Data Secondary Data

Graph No 3: Student Academic Indicators: Top Rated/Ranked Practices



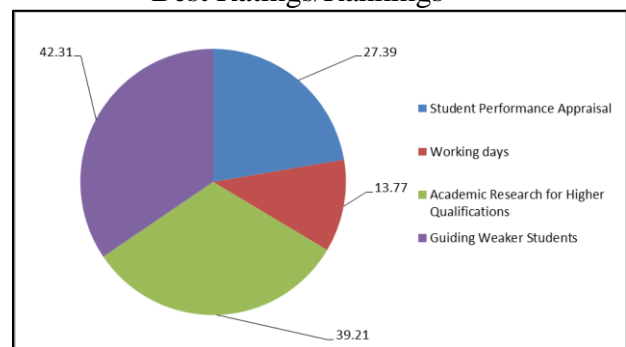
Source: Meta-Data Secondary Data

Graph No. 4: Top Rated/Ranked Practices in Campus Infrastructure and Resources



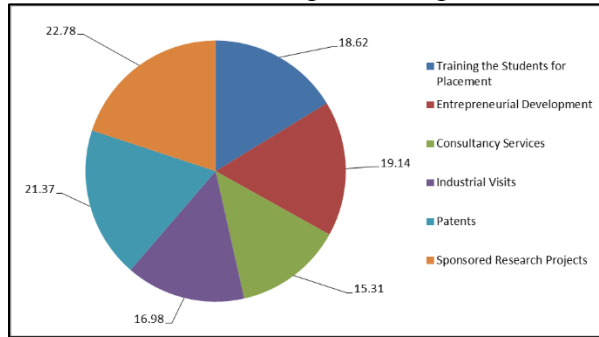
Source: Meta-Data Secondary Data

Graph No. 5: Student learning levels and feedback (Graph No. 5): Practices with the Best Ratings/Rankings



Source: Meta-Data Secondary Data

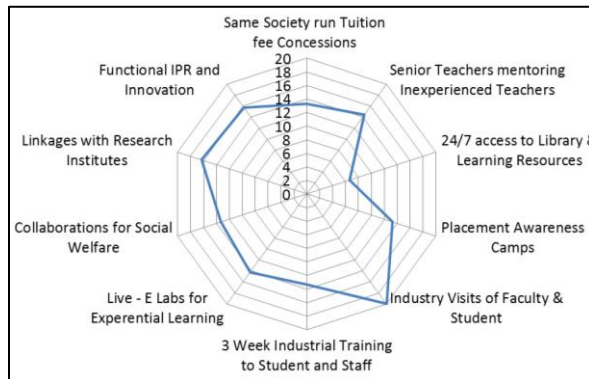
Graph No 6: Institutional Collaborations: Outreach and Consultancy: Practices with the Best Ratings/Rankings



Source: Meta-Data Secondary Data

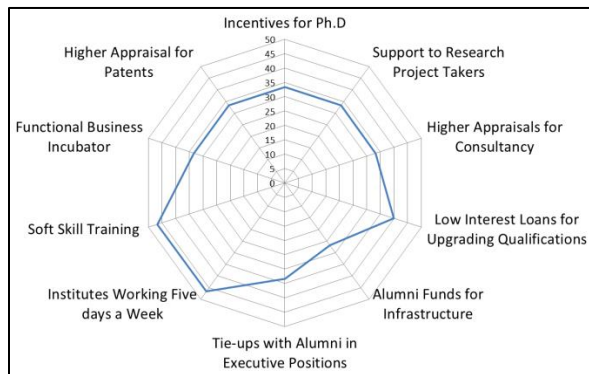
B] A Review of NAAC Accredited Institutes' Best Practices (Grade Specific Categorization)

Graph No 7: NAAC Grade: A++: Top Rated/Ranked Practices



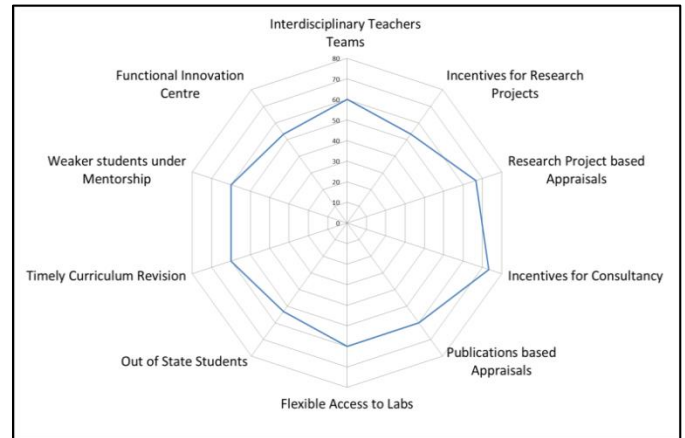
Source: Meta-Data Secondary Data

Graph No. 8: NAAC Grade A: Top Rated/Ranked Practices



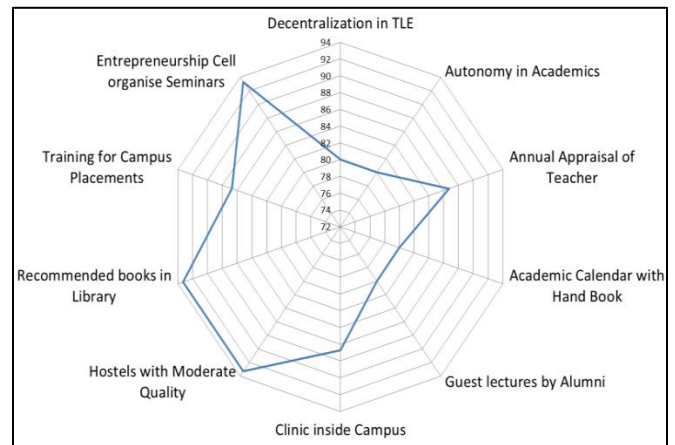
Source: Meta-Data Secondary Data

Graph No 9: NAAC Grade B++: Top Rated/Ranked Practices



Source: Meta-Data Secondary Data

Graph No 10: NAAC Grade B & B+: Top Rated/Ranked Practices



Source: Meta-Data Secondary Data

Findings

From the data collected and analysed in sections A and B of Data Analysis and Interpretation, four main theme indicators have been identified as significant benchmarks.

1. Student Achievement Core: Through its commitments to open access learning, offering a portfolio of appropriate and well-chosen educational programs, services, and activities, and its ongoing attention to student persistence and educational attainment, Theme Institute supports all students' success in meeting

- their educational goals. Access, persistence, completions, success efforts, and demographics are all important concepts.
2. **Priority Initiatives for Student Success:** Create and implement a strategic enrollment management plan that supports all student populations' achievement. Provide academic support and other services to help students set and achieve their objectives. Provide equal opportunities: affordability, initiatives that promote all student populations' success and retention, and efforts to reduce the gap. Ensure that services are egalitarian by using universal design, accessible facilities, and multilingual communication. To boost persistence and completion, use data-driven techniques. Support the whole pre-graduate continuum by promoting efficient transitions into and through the MBA programme.
 3. **Excellence in Teaching and Learning:** Core Theme Institute prepares and enables excellence in teaching and learning through its commitments to ensure curriculum relevance, responsiveness, and inclusiveness; to maintain an effective teaching environment by supporting all faculties' teaching and professional achievement; to provide access to high-quality learning support services; and to monitor academic and professional performance. Curriculum, programme design, faculty professional development, and assessment of learning outcomes are all important themes.
 4. **Priority Initiatives for Teaching and Learning Excellence:** Create and promote new projects, certificates, credentialing methods, and degrees that match the region's needs, such as expanded baccalaureate programs. Involve faculty, staff, and students in regional, state-wide, national, and international discussions on higher education's future. Develop a programme that includes undergraduate research and experiential learning. Incorporate personal effectiveness abilities such as communication, teamwork, and leadership into the curriculum. Through interdisciplinary learning focusing on economic, social, and environmental sustainability, prepare students to prosper in an interconnected and interdependent world. Encourage faculty professional development to promote disciplinary and pedagogical currency and creativity.
 5. **College Culture and Life:** Through its commitments to support a campus environment that is diverse, inclusive, open, safe, and accessible; to model a college community that affirms and embodies pluralism and values collaboration and shared decision making; and to honor and practise sustainability, creativity, and innovation, Core Theme Institute values learning and working environment. Equitable procedures, decision-making, efficiency, work-life quality, and safety are key ideas.
 6. **Priority Initiatives in College Life and Culture:** Integrate social justice into day-to-day college operations, ensuring a nondiscriminatory, universally designed, and accessible environment. Improve operational decision-making structures and support the college's governance system. Establish consistent and efficient processes based on best practises in higher education, such as long-term planning and change management, onboarding and continuous training, disaster readiness, and succession planning. Improve the information-sharing systems. Become the region's employer of choice by

providing an engaging environment, competitive wages, and a shared value system for employees. Encourage all employees to pursue professional development, progress, work-life balance, and wellbeing. Address disparities that part-time faculty and staff face.

7. Participation in and enrichment of the community: Through its commitments to collaborate with businesses, industries, local school districts, primary transfer institutions, alumni, donors, and governmental and social service organisations to develop and refine educational programs that prepare individuals for academic success, employment, and lifelong learning, Core Theme Institute aspires to be a leader and partner in building a strong and vibrant region. Continuing education, funding, community connections, alumni participation, and college identity are all important issues.
8. Priority Initiatives for Community Engagement and Enrichment: Create an educational environment that fosters lifelong learning opportunities for informed and active citizenship. Establish strong relationships with community partners—employers, postsecondary institutions, community organisations, service groups, companies, and neighbors—in order to develop and sustain relevant programs. Make our identify known. Create and implement a system for carefully listening to and responding to community and regional needs. Create a large network of active alumni. Look for financial opportunities to help offset the loss of societal support.

Recommendation

Program for Best Institutional Development Practices through Quality Improvement Over the Next Five Years: Excellent performance efforts over the next five years are planned for the four major Institute topics in the Strategic Plan 2019-20. It identifies several of the most appropriate methods of the MBA Institute, privately funded and in rural or urban areas. The program promises to provide higher educational opportunities, to educate students to become global citizens, to promote social justice in all its activities, to engage with society, to fix its foundations, and to improve human capacity.

Table No. 1: Improved involvement with society and industry is the first best practise (See Appendix)

Table No. 2: Best Practices 2, 3, and 4: Expanding the Educational Field, Improving the Internal Support System, and Improving the Student Experience (See Appendix)

Table No. 3 shows the best practises. 5, 6, and 7: Increase funds, recruit out-of-state students and professors, and push knowledge forward (See Appendix)

Table No. 4: Enhance Diversity, Enhance Alumni Engagement, and Develop a Cleaner and Greener Campus (Best Practices 8, 9, and 10) (See Appendix)

Conclusion

Blueprint is a useful tool for keeping institutional development on track. The MBA Institute's work plan and best practices serve as a self-assessment tool for timely development. The plan is designed to help you achieve your goals. The focus of this chapter is on the good deeds. Private MBA-funded institutions are included in the

research sample. The information is collected from secondary sources of websites approved by the NAAC. The NAAC compiled a list of best practices based on published research. Secondary data meta-analysis was used to determine best practices. The top ten practices have been established as a result. The ID is made using

the concept of the parameter power. For each practice, five-year programs are recommended as programs. As a result, a total of ten plans have been developed and proposed for the healthy expansion of the MBA Institute.

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Appendix

Table No. 1: Improved involvement with society and industry is the first best practise

Sr. No.	Best Practice	2018-19	2019-20	2020-21	2021-22	2022-23	Target
1	Enhance Engagement with Society and Industry	Create an Office for Inreach and Outreach with schools, under graduate colleges and local community	Create a Business Development and Industry Interface Office in to enhance Intellectual Property (IP) commercialization, and promote industry interactions.	Develop an ecosystem in the campus to enable and support faculty involvement in the Research Cell.	Set up a business accelerator in the campus and strengthen incubation and Entrepreneurship ecosystem in the campus. Enhance networking and support the Development of Baramati as a startup hub.	Enhance engagement with educational and research institutions in the region with joint workshops and joint research by providing seed funding.	Number of open days: one per year Number of visitors for open days: 200 per year Number of external visitors to public lectures/colloquia: 20 per year Target IP commercialization/licensing: 1 per year New industries engaged to the Institute: 2 per year Total number of faculty with industry engagement to: 10 per year Joint publications/patents with companies associated with Research Cell: 2 per year New startup companies: 1 per year Number of city and state problems taken up as research projects: 2 per year Number of personnel trained from the city and state employees: 10 per year Number of TEQIP training offerings to people trained: 5 per year; 10 people trained per year Number of joint research projects with regional institutions: 1 per year

Source: Meta-Analysis of Secondary Data

Table No. 2: Best Practices 2, 3, and 4: Expanding the Educational Field, Improving the Internal Support System, and Improving the Student Experience

Sr. No.	Best Practice	2018-19	2019-20	2020-21	2021-22	2022-23	Target
2	Broaden Educational Areas	Create Academic Support Program for identification of new program/ areas and realignment of existing program based on special needs of the city (possibly finance, commerce, entertainment), regional challenges, and faculty Expertise	Initiate new MBA Executive program in existing academic entities.	Initiate Joint Academic program in collaboration with Skill based institutions.	Initiate major curricular revision to broaden education and enhance skill based courses and the liberal arts foundations.	Strengthen ASP to promote Institute engagement with the city and the local government for capacity building and Skill based societal problem	New programs introduced: 3 EMBA, ASP, Up-Skill Periodic review of ASP curriculum: once in every 2 year period New courses introduced: 10 by 2023 New Skill based programs introduced: 5 by 2023
3	Improve Internal Support Systems	Simplify systems and processes with a modern ERP system	Appoint and empower departmental managers to support and co-ordinate purchase, Maintenance and administration.	Service orientation and training for staff, service response and new recruitment rules to attract qualified staff at various levels.	Conduct annual satisfaction survey	Implement Pay Commission based Compensation for all staff	Reduction in average processing times Financial Support through Competitive Salary and Sponsorship for Development/Research/Consultancy Continuous improvement on satisfaction survey scores Improved faculty Development and mentorship: 5 FDPs In-house and 2 MOOCs/faculty/Year
4	Enhance Student Experience	Enhance and revamp faculty advising system to improve interactions Supervised internships for students in industry for longer duration.	Conduct annual student satisfaction survey and setup a complaint redressal system with an Ombudsman.	Enhanced student facilities including cafeterias, food courts and interaction spaces.	PhD Research Centre of SPPU with Infrastructure support for Teaching and Learning	Support for student participation in international technical competitions, Including academic credit for learning by doing.	Seminar Hall with Increase number of additional seats/ rooms: 500 by 2023 Number of PhD students mentored for Teaching/ Entrepreneurship: 20 per year Number of interaction spaces: 2 by 2022

Source: Meta-Analysis of Secondary Data

Table No. 3 shows the best practises. 5, 6, and 7: Increase funds, recruit out-of-state students and professors, and push knowledge forward

Sr. No.	Best Practice	2018-19	2019-20	2020-21	2021-22	2022-23	Target
5	Broaden Funding Base	Create Institute Development & Relations Foundation (IDRF) as a systematic Approach to donations and for enhanced engagement with stake holders.	Increase internal revenue through EMBA course, ASP and Skill based courses.	Improve financial management using ERP and establish methods for costing space, facilities, utilities and managing costs.	Increase research projects from industry (Research Cell, Uchchar Avishkar Yojana)	Establish Centers of Excellence in Continuing Online Education	Increase Donation receipts: Rs.10 Lakhs per year by 2023 Increase internal revenues: Rs.15 Lakhs per year by 2023 Increase consultancy and industry R&D receipts: 10 Lakhs per year by 2023
6	Attract Out of State Students and Faculty	Create International Relations Office with dedicated staff.	Enhance information availability and publicity in target states to attract students. Enhanced link with partner out of state universities by providing dedicated budgets.	Facilitate student exchange and joint-MBA programs	Attract Out of State faculty on long term appointments.	Attract Training and Placement Officers on long term appointments.	Increase percentage of out of state students (exchange students and regular students): 5% of new admissions in 2023 Increase percentage of out of International students (exchange students and regular students): 1% of new admissions in 2023 Increase number of long term out of state faculty: 5 by 2023
7	Advance Frontiers of Knowledge	Establish mechanism to support high impact research through an annual call for proposals and a process for identification of thrust areas and publish it in Institute ISSN Journal	Enable access to data required for research and specify a data use and access policy. This refers to Plagiarism Software Licenses.	Encourage formation of multi-disciplinary research centers in high potential areas and enable cluster SIP hiring.	Proactive and flexible mechanisms to attract high quality PhD student researchers. Encourage and support advanced research conferences at the Institute.	Departments to set up awards committees to help identify and nominate faculty and researchers for national and international awards.	Research output and impact should continue to increase. This would be reflected by increased publications per faculty, citations per faculty, citations per paper (this would not be specifically targeted, but would emerge as an outcome of enhanced research) Increase in annual research funding: Rs 5Lakh per year by 2023 Establish new multi-disciplinary centers: 2 by 2023 Increase licensing: 1 per year; and patenting:1 per year by 2022

Source: Meta-Analysis of Secondary Data

Table No. 4: Enhance Diversity, Enhance Alumni Engagement, and Develop a Cleaner and Greener Campus (Best Practices 8, 9, and 10)

Sr. No.	Best Practice	2018-19	2019-20	2020-21	2021-22	2022-23	Target
8	Enhance Diversity	Recruit Women Faculty and bring ratio 1:1	Increase the size of day care facility so that more staff members and students can use it.	Focused outreach to present women students, alumni, faculty members as role models to school students	Enhance percentage of women students in new admissions	Convey the exciting career opportunities provided by an MBA education to girl students in Baramati	Increased percentage of women entrants in students (20% by 2023), staff and faculty Number of outreach programs to attract female students: 1 per year
9	Enhance Alumni Engagement	Create an Alumni Centre at the Institute to support alumni visits, activities and engagement.	Initiatives for supporting alumni needs for continued learning and career improvement. Lifelong Learning Modules targeted for Alumni	Multiple interaction modes such as, interaction between alumni and students, mentoring interaction between alumni and faculty, alumni inputs for curriculum development, alumni support for student placements and internships, alumni involvement in Department Advisory Committees and in enhancing the innovation ecosystem at Institute.	Enhance effectiveness of the Alumni Cell to pro-actively identify potential SIP recruiters and prospective faculty and Staff	Engage alumni as adjunct faculty.	Number of alumni visitors to Alumni Centre and the Institute: 100 per year Number of courses/workshops/networking events for alumni: 5 per year
10	Develop a Cleaner and Greener Campus	Annual Green Audit	Community Service through Village Adoption	Annual Energy Audit	Environment Protection Award	Involve students in campus planning including green campus initiatives.	Setup a cell which will monitor, implement and enable policies and initiatives of the Green Campus Committee Annual Audits: 5 per year Establish Green Campus metrics and work towards reducing carbon footprint water footprint, energy footprint Improvement on green metrics: 5 per year

Source: Meta-Analysis of Secondary Data

TRAINING NEEDS FOR TEACHERS IN INDIAN HIGHER EDUCATION: TEACHERS' PERSPECTIVE

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ABSTRACT

Team performance is important to achieve organizational goals. Training Needs Analysis should be undertaken at team level to enhance team performances. Reviewing individual competency and skill sets as well as team skills and competencies are essential to achieve desired Organizational objectives. An individual's skills sets are mapped and utilized in the team for better performance. Thus, enhancing the team performance by adding individual's skills and competencies in the group. Through TNA one experiences personal and professional development. Employees are given in-house as well as outdoor trainings as per need. The leader/manager plays an important role in identifying training needs of the employees. It sometimes is a part of appraisal.

Keywords: *Training Needs, Competency, Performances, Development, Appraisal.*

Training Needs Analysis:

Introduction

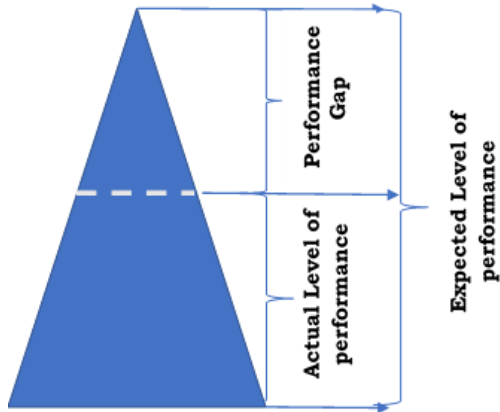
In the technology driven and ever-changing competitive world TNA has become a part and parcel of any profession. It not only helps the organization to have trained and proficient individuals but also to retain efficient and effective human resources. Individually, it helps employees to understand their strengths and weaknesses and provides an opportunity to work on it, in order to achieve individual goals. TNA makes manifold changes in the productivity of the employees.

Through TNA one experiences personal and professional development. Employees are given in-house as well as outdoor trainings as per need. The leader/manager plays an important role in identifying training needs of the employees. It sometimes is a part of appraisal.

First of all, leaders need to identify what skill sets are required to achieve the particular task or the process. Next is to assess existing skill

levels of the team members and finally determine the training gap.

Training Need Analysis (TNA) is a process of recognizing performance gaps (Diagram 1) and accordingly identify the individual and related training needs (Diagram 2). It helps in understanding how to design trainings for particular group and in what way. TNA is done to assess training needs of an organization or an educational institution. Especially it is done to find out gap between the already possessed knowledge, skills and attitude of individuals working in the organization and the need/requirement of essential and additional skills to support their qualities to achieve the organizational goals. It is key to success for an individual and for the organization.



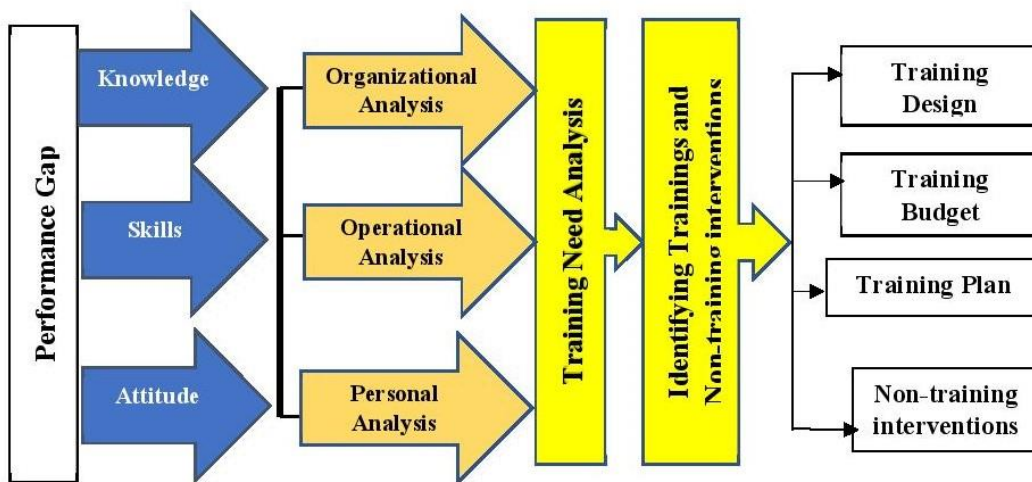
(Diagram 1: Identification of Performance Gap)

TNA is done specifically to get the answer of who, what, why, when, where and how. It answers the questions like:

- ☞ Why one needs training?
- ☞ Which skills are required?
- ☞ Who needs the training?
- ☞ When do they need training?
- ☞ Where will the training be conducted?
- ☞ How will the new skills be implemented?

TNA is basically done to identify needs of employment and make them well equipped with the courses and skills required to produce desired results. It improves their efficiency and productivity. In every organization, TNA is carried out for constructive outcome.

There are mainly three types of training needs. They are organizational, team and individual.



(Diagram 2: Process of TNA)

TNA considers key skills like knowledge, emotional intelligence, behavior etc. and how to develop them effectively. TNA is generally done in 3 levels: Organizational, team and individual. These three levels are interconnected and interdependent. It gives clear idea about the areas to be improved and the Skill gaps where training is required. The outcome of TNA is linked to creation of

organizational and individual development plan and objective.

Organizational Level

TNA helps to review organization with its strengths and helps to build strategic and operational plans in terms of Human Resources. Once the picture of organizational goals, future plans is clear then the leaders can address the weakness and build on the

strengths with knowledge, skills and behavior of the employees.

Team Level

Team performance is important to achieve organizational goals. TNA should be undertaken at team level to enhance team performances. Reviewing individual competency and skill sets as well as team skills and competencies are essential to achieve desired Organizational objectives. An individual's skills sets are mapped and utilized in the team for better performance. Thus, enhancing the team performance by adding individual's skills and competencies in the group.

Individual Level

TNA helps individuals to understand about the training needs of an individual to achieve individual goals in accordance with the organizational goals. TNA helps to identify weaknesses and strengths and decides upon the particular training program for the professional development of an individual. In this study the researcher is focusing on individual training needs .

There are various methods and **Techniques of TNA:**

- Observation
- Questionnaires
- Consulting a person on key position.
- Review of literature
- Interview
- Focus groups
- Surveys and samples
- Records & report

When we think about **Training Needs for Teachers in Indian Higher Education, we need to overview in-service training programs. Its development and its current status.**

In-service training programs:

In service training can be stated as the forms of education and training given to the individual who is on duty. In service training can be seen as a staff development process. A staff development process is a deliberate process which involves anticipating the future needs off the staff and providing necessary resources in order to further their job satisfaction and career prospects.

Professional Development initiatives of teachers in Indian higher education:

India is one of the countries to attract the most intelligent teachers in the Higher Education with the positive and strong system . The main aim is to create good human resource.

The Higher Education system plays an important role in nurturing human resources. The system focuses on making good leaders with scientific temper, with vision and critical thinking. Post independence Era witnessed a massive expansion of the educational system. From 22 Universities, 500 colleges, 15000 teachers and 1,00,000 students in 1951, the number has increased to 1043 universities and university level institutions, 54,122 colleges, 1503156 teachers and 3,85,36,359 by the end of 21st century.

While dealing with professional development of teachers in higher education, the Kothari Commission Report (1964-1966) pointed out that a lecturer neither receives orientation to his profession nor is given time for adaptation to his job. He is satisfied or perhaps, perforce satisfied to copy the methods adopted by his own teachers or senior colleagues.

The college/university teacher has always been an inspired lecture, which sways the students-audience and motivates them to acquire more knowledge on their own. This system has lasted for long due to lack of teacher evaluation seriously by the university/college authorities and lack of accountability on part of the teacher as individual.

Today the condition is totally different. The teachers are not dedicated. They are practical. This has led to incalculable losses, eroding the academic standards both amongst the teaching community and the students at large. A need for a suitable form of training and orientation to professionalize a lecture, thus, became evident.

Various staff development programmers are mainly intended to improve the professional knowledge of the staff, their skills and attitudes to enable them to accomplish their assignments more efficiently and effectively. It is a continuous process, which should take place in an organized manner to help the individuals to acquire deep knowledge, develop skills and improve value- judgment. A comprehensive approach should aim at viewing academic, managerial, administrative and technical support staff development as a whole within a facilitating infrastructure. Staff development allows teachers to develop their own faculties so that they can participate in formalization of the andragogic, technical and resource issues related to Higher Education. They should do their SWOT analysis and overcome their drawbacks. This is possible only through a proper induction program at the entry level of the teaching profession.

The National Policy on education (NEP) 1986 in its **Program** of Action (POA) showed a significant link between motivation and quality education. For the effective implementation of roles and responsibilities of a teacher in the system, the NEP decided to Motivate teachers by enhancing knowledge through systematic orientation in specific subjects, techniques and methodology, thereby inculcating in them the right kind of values, which would, in turn encourage them to take initiative for innovation and creative work.

NEP has suggested some programs under various schemes::

☞ Organization of specially designed orientation programs focusing on teaching methodologies, andragogy and educational psychology for all new entrants in teaching profession.

☞ Organization of subject oriented refresher courses for in service teachers focusing on latest trends and developments in respective subjects.

☞ Encouraging teachers to participate in seminars, symposia etc.

For continuous and effective organization of these programs it was suggested to establish permanent structure in the higher education system to achieve these objectives.

Introduction of Academic Staff Orientation Scheme:

Keeping the above in view and realizing the lacunae in the professional development of college/university teachers, the University Grants Commission (UGC) thought of organizing Orientation Programs for the new entrants and Refresher Courses for the benefit of in-service teachers at various levels of their profession. The UGC rightly thought that both the orientation programs and refresher Courses should be organized with an entirely different philosophy. In the Seventh Five Year Plan, the UGC formulated a new scheme, which came to be known as the scheme of establishing Academic Staff Colleges (ASCs), which are now known as UGC-Human Resource Development Centre (HRDC).

Considering the financial and other resources involved in the in-service training programs organized by HRDCs, it is felt necessary to understand the training needs for individual teachers from teachers' perspective.

Here, the researcher has adopted the survey method through Questionnaire. The researcher had distributed questionnaire to Higher Education teachers. This survey was done by the researchers to understand the Training Needs of higher education teachers. The various areas pertaining to a teachers

personal and professional life, impacting her/his performance and professional development and which can be considered in

the in-service trainings, was majorly thought over in the survey, the areas identified were as below:

Questionnaire:

1.	Role of the teacher & expectations from him/her
2.	Innovative teaching-learning methods and skills
3.	Overall Personality Development of a teacher
4.	Use of Technology in teaching & Learning
5.	Social Awareness
6.	Communication, Presentation Skills and Language Proficiency
7.	Microteaching & Classroom management
8.	Curriculum development and evaluation methods
9.	Updated knowledge of Andragogy
10.	Higher education system
11.	Recent trends / updates in the respective subjects
12.	Governance & Leadership in higher education
13.	Employability / career opportunities & entrepreneurship for students
14.	Work-Life balance

The higher Education Teachers responded enthusiastically. Based on the responses

received from teachers across the country, the results for each statement is as follows:

1. Role of the teacher & expectations from him/her

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	5	2.6	2.6	2.6
	Agree	39	20.1	20.1	22.7
	Strongly Agree	150	77.3	77.3	100.0
	Total	194	100.0	100.0	

While responding about training on role of the teacher and expectations, 97 % teachers agreed upon the necessity of having training

on this, with almost 77% teachers strongly agreed to this statement.

2. Innovative teaching-learning methods and skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	5	2.6	2.6	2.6
	Agree	39	20.1	20.1	22.7

	Strongly Agree	150	77.3	77.3	100.0
	Total	194	100.0	100.0	

About the point of innovative teaching learning methods and skills 97% teachers agreed on the out of box teaching methods

and sharpening the skills to enhance attention span of the students.

3. Overall Personality Development of a teacher

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	.5	.5	.5
	Neutral	9	4.6	4.6	5.2
	Agree	51	26.3	26.3	31.4
	Strongly Agree	133	68.6	68.6	100.0
	Total	194	100.0	100.0	

For the overall personality development factor almost 94% of teachers agreed strongly. only 5% teachers disagree to this

factor as they think that ‘high thinking’ is the important factor than outer development.

4. Use of Technology in teaching learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	8	4.1	4.1	4.1
	Agree	50	25.8	25.8	29.9
	Strongly Agree	136	70.1	70.1	100.0
	Total	194	100.0	100.0	

This factor was inevitable part of any training as 95% of teachers backed up this point. The non technical as well as technical teachers have to adopt this technical part mandatorily

because of Pandemic. It is need of the hour. They have to willingly or unwillingly accept the technical part of learning.

5. Social Awareness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	9	4.6	4.6	4.6
	Agree	56	28.9	28.9	33.5
	Strongly Agree	129	66.5	66.5	100.0
	Total	194	100.0	100.0	

As there is a great influence of social media, there is a great need of awareness. A teacher should be aware of various social issues to be

in pace with the students. Hence, 96% of teachers strongly agreed on this point.

6. Communication, Presentation Skills and language Proficiency

		Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Neutral	5	2.6	2.6	2.6
	Agree	45	23.2	23.2	25.8
	Strongly Agree	144	74.2	74.2	100.0
	Total	194	100.0	100.0	

Communication and presentation are inseparable parts of teaching. They can transfer the knowledge easy. The combination can be used in traditional as well as in modern way. Language proficiency is a

must if you want to reach the masses. If one needs global exposure, there is no way out but language proficiency.74% teachers agreed to this point and 23% backed them up.

7. Microteaching & Classroom Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	.5	.5	.5
	Disagree	5	2.6	2.6	3.1
	Neutral	16	8.2	8.2	11.3
	Agree	53	27.3	27.3	38.7
	Strongly Agree	119	61.3	61.3	100.0
	Total	194	100.0	100.0	

Many a times a good teacher needs professional training in intervals for classroom management and regarding new trends in teaching. It helps them in conducting their classes effectively and with

efficiency. Therefore, 88% teachers agreed to this point. Approximately 8% teachers cling to traditional way of teaching and stubborn not to change themselves.

8. Curriculum development and evaluation methods

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	1.0	1.0	1.0
	Neutral	10	5.2	5.2	6.2
	Agree	60	30.9	30.9	37.1
	Strongly Agree	122	62.9	62.9	100.0
	Total	194	100.0	100.0	

With changing time, we need to change our curriculum and the method of evaluation. 92% teachers are open for this change. 5%

are neutral. In short most of the teachers are ready to welcome changes and inculcate them.

9. Andragogy:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	7	3.6	3.6	3.6
	Agree	54	27.8	27.8	31.4
	Strongly Agree	133	68.6	68.6	100.0
	Total	194	100.0	100.0	

For Higher Education andragogy is applicable. Dealing with students in a different level and using various methods of teaching, experiential learning, experimental

learning, field work are essential. Adopting these methods will help in overall development of the students. 95% of the teachers agreed on this point.

10. Higher Education System

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	.5	.5	.5
	Neutral	14	7.2	7.2	7.7
	Agree	64	33.0	33.0	40.7
	Strongly Agree	115	59.3	59.3	100.0
	Total	194	100.0	100.0	

There is a particular structure and a separate system in Higher Education. To be well versed with all these systems is a part of learning of a teacher in Higher Education.

Once a teacher knows about the system, the path towards gaining heights in system becomes very easy. 95% of the teachers agree to this point.

11. Recent trends / updates in the respective subjects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	5	2.6	2.6	2.6
	Agree	58	29.9	29.9	32.5
	Strongly Agree	131	67.5	67.5	100.0
	Total	194	100.0	100.0	

A teacher must have knowledge of updated trends and technologies of their respective subjects. They should be aware of what techniques should be used to cater it to the

students. 98% of the teachers strongly agree with new andragogy and up-dation of their field.

12. Governance & Leadership in Higher Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	1.0	1.0	1.0
	Disagree	2	1.0	1.0	2.1
	Neutral	16	8.2	8.2	10.3
	Agree	81	41.8	41.8	52.1
	Strongly Agree	93	47.9	47.9	100.0
	Total	194	100.0	100.0	

Not only academic but also administrative part is important for being a teacher in higher education. Knowing the hierarchical structure of university authorities as well as governance and various policies to run

different departments is necessary. One can get acceptance and exposure to various schemes and can utilize his /her knowledge for the betterment of education sector. 93% teachers agreed to this point

13. Employability / career opportunities and entrepreneurship for students:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	.5	.5	.5
	Neutral	9	4.6	4.6	5.2
	Agree	57	29.4	29.4	34.5
	Strongly Agree	127	65.5	65.5	100.0
	Total	194	100.0	100.0	

Every course curriculum should focus on employability of students. It should open various career opportunities for the students. They should be entrepreneurs and create employment for local and global citizens.

The objective of any course is to make all the students self sufficient and employable. A good human resource will help in the growth of national GDP. 96% teachers agreed to this point.

14. Work-Life Balance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	1.0	1.0	1.0
	Neutral	15	7.7	7.7	8.8
	Agree	67	34.5	34.5	43.3
	Strongly Agree	110	56.7	56.7	100.0
	Total	194	100.0	100.0	

Modern age is the age of technology and competition. Especially due to Pandemic, there is paradigm shift in all levels of education. It is difficult to have work -life balance due to excess ambition, cut-throat competition and fast-growing globalization. To be in pace with all these facets of life, work life balance becomes a necessity. 90%

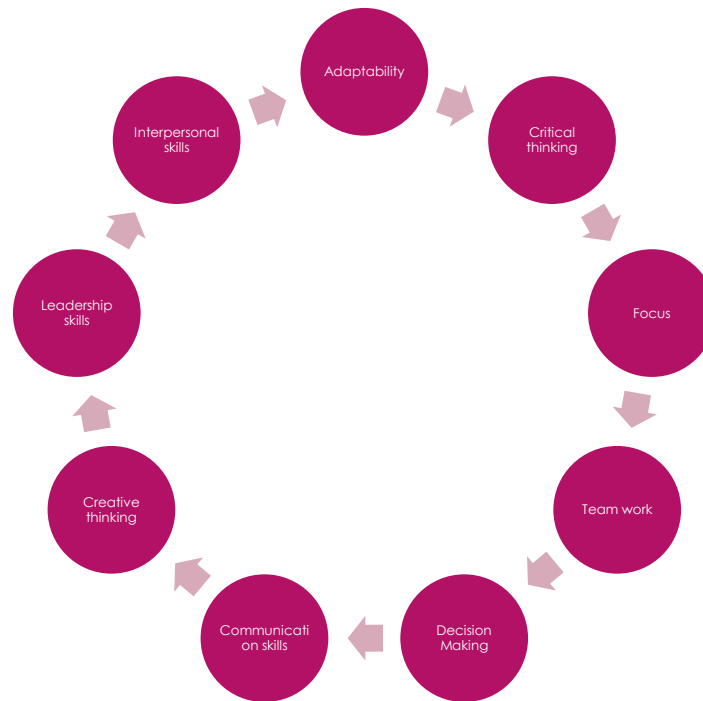
The high-tech world needs employees to be independent thinkers responsible for making good decisions based on limited information. TNA fulfills this need if someone is lagging

teachers agreed to this point whereas 7% teachers are neutral.

The above survey is self explanatory. TNA makes it easy to enter and smoothly succeed to higher steps of Higher education. With TNA, knowledge, skills and abilities play an important role in self development.

Knowledge, Skills, and Abilities

behind or short of skills and knowledge required for the job. There are few competencies required, they are as follows:



The above Survey explains in detail the training needs of the teachers in Higher Education. Trainings are needed to strengthen the weaker part of organization. It also strengthens the culture of any organization . It's an essential part of planning and development of any organization.

Based on the study, it can be said that majority of teachers in Indian higher education, agrees to the areas identified by the researcher and also expects the in-service training programs to cover contents related to these areas.

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ARTIFICIAL INTELLIGENCE APPLICATIONS IN THE LIFE INSURANCE SECTOR: A STUDY OF SELECT LIFE INSURANCE COMPANIES IN INDIA

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ABSTRACT

Indian Life insurance industry has witnessed a remarkable change in recent times. Insurance sector has included technology in various aspects of business - like consumer experience, underwriting, marketing and of course the constant competition. Digital interface, mobile and internet assistance and easy payment systems have transformed this sector in a considerable way. In recent times, Technology is being implemented in front as well as back-end insurance processes. This is possible mainly because of the use of Artificial Intelligence (AI) in various insurance operations like customer profiling, marketing, underwriting, claim processing, fraud detection etc.

This research is based on secondary data collected from various reliable sources like media reports, press releases and insurance company's websites etc. Several newspaper articles, reports, websites, research papers and expert comments have been reviewed to map the present state of use of AI in the insurance sector. The study offers an overview of AI technologies used in different insurance operations by the select six life insurance companies in India. The research focuses on AI enabled applications used in select insurance operations either customer-facing or employee-facing. The study also discusses how, where, and why AI applications are critical in the insurance operations.

Keywords: Artificial Intelligence, Life Insurance Companies, Insurance Processes, Customer experience, Operational efficiencies.

Introduction

Artificial intelligence (AI) is an extensive branch of computer science. AI powers computers and machines to imitate the problem-solving and decision-making talent of the human brain. AI focuses on developing the abilities of operation systems to solve issues complex skill set like learning, reasoning and self-correction. AI is applied in varied industries and services. Currently, it is applied in the field of healthcare, education, banking and financial services, automobiles and gaming to name a few. Artificial intelligence systems use several multifaceted algorithms that execute greater decision-making proficiencies with high communication speed.

Technological adaptations in the insurance sector were slow as compared to the other sectors. The main reason behind this is dependence of insurance industry on manual work. Insurance industry is adapting the AI efficiencies in day-to-day working to improve on performance speed and accuracy. Application of AI in insurance sector will bring

boon in the sector and help to make the processes more hassle free. Some of the areas in insurance sector, where artificial intelligence can be successfully applied are - distribution, underwriting, pricing, claims and product improvisation. AI applications are currently affecting the promotion, purchase and pricing of insurance product. The scope of AI in Indian insurance market is going beyond telematics and risk assessment.

Apart from insurance companies, the engineering and technology start-ups in India are slowly and steadily recognizing the importance of AI applications, opportunities and wide scope of operations in insurance sector. InsurTech companies in India are steadily approaching this comparatively new field of application and solving the critical insurance challenges. According to India Brand Equity Foundation Report (2021), currently, there are 110+ InsurTech start-ups operating in India.

Literature Review

Eling, M., Nuessle, D. and Staubli, J. (2021)

studied the effect of AI on the insurance sector using Porter's value chain (1985) and Berliner's insurability criteria (1982). The study based on a data set of papers and industry studies. The results demonstrated that the cost efficiencies, new revenue recognition and better risk management in the field of insurance is possible with the help of AI. The study identified two major advantages of AI execution. The first one is - AI will help the insurance companies in correct estimate of loss probabilities. The second advantage is it can transform few risks from high frequency to low frequency. This study leads to new thought process among insurance companies and they started thinking to design adequate insurance products.

Seema Rawat, Aakankshu Rawat, Deepak Kumar, A. Sai Sabitha. (2021) the research work focuses on identifying the factors for claim filing in insurance. The data set was analysed using machine learning algorithms on performance metrics. The study showed that InsurTech can help to know and classify the customers more precisely. A study of customer demographics, claim pattern and claim analysis can assist significantly in insurance product improvisation and suitable premiums calculations. The policies can be altered on the basis of profit/loss ratio by recognizing the policy acceptance practice of insurance company.

Sushant K Singh and Muralidhar Chivukula. (2020) highlighted the role of machine learning and deep learning, in addressing the varied issues in insurance sector. The study mentioned that the data produced and the challenges faced by the insurance companies are multifaceted. It concluded that the AI application in the insurance industry is still in the elementary stages and there is a long way to go. Traditional statistical and machine learning methods may lack in establishing precise prediction models in nearing future due to increasing complexities involved. The study urged the new generation data scientists and engineers to work together to discover innovative ways of handling unique data of insurance industry and developing sustainable solutions. The study also mentioned about the expected proficiencies of data scientists. The study predicted that the

insurance industry innovations and upcoming technologies such as Drone, the Internet of Things (IoT), and Fitbit would bring additional challenges to AI professionals while working in the field of insurance.

Naman Kumar, Jayant Dev Srivastava and Harshit Bisht. (2019) The aim of the study was to get new sights into the operational problems and customer dissatisfaction in insurance. Few international insurance companies and InsureTechs companies were studied to develop the model to understand the relationship between AI & its uses in the sector. The study found the scope and market penetration of AI in current sector. This research showed that these techniques can help to increase customer satisfaction, reducing frauds, and reduce operational complexities thus increasing profits. Riikinen, M., Saarijärvi, H., Sarlin, P. and Lähteenmäki, I. (2018) has discussed the role of AI in improving value in insurance sector. The purpose of the study was to understand the role of insurance chatbots which support customers' and creates value. Three major points – AI, use of customer data in reverse manner, and service logic were briefly discussed. The results were further shown through cases that studies different ways of customer support leading to value creation.

Research Objectives

- 1.To study the scope of AI technologies in life insurance sector.
- 2.To study AI applications of a select life insurance companies in India.

Methodology

This research is based on secondary data collected from various reliable sources like media reports, press releases and insurance company's websites etc. Several newspaper articles, websites, research papers and expert comments have been reviewed to map the present state of use of AI applications in select companies of insurance in India. The selection of companies are based on the performance criteria. Top six insurance companies have been selected for review purpose.

Analysis

Currently twenty four life insurance companies

are operating in India. LIC of India is public sector company rest all are from private sector. The researchers have selected top six insurance companies on the basis of media reports for this study.

1. Life Insurance Corporation of India (LIC)

It is one of the oldest insurance companies in India. LIC, being a government entity has always followed a traditional path of business making. The growing importance of technology in financial service sector and cut throat competition from private players has made LIC to shift to online connectivity and futuristic technology.

Being among the top service brands in India, LIC has a huge customer base of over 30 crores. The entire 30 crore policy records have been digitized by the year 2020. LIC has changed and upgraded its operations over a period of time. Now, LIC is set to improve its IT system in coming years applying blockchain and AI. During the lockdown it has started issuing electronic policies to its customers. According to Vipin Anand, Managing Director, LIC (2020) "LIC is committed to Aatmanirbhar Bharat agenda and for this we plan to deploy technology for better operations even from remote locations."

LIC has processed 6.5 Cr policies amounting to Rs 25,000 Cr online in the first quarter of 2020. It accounts to about 42% of insurance premium collected online between the period April-July 2020. Not only premium collection but the payment of claims and pension process has also been smoothened out with digitization. About 51 lakh claims were settled between April-July 2020 which was only 47 lakh during the same period previous year.

2. ICICI Prudential Life Insurance

It is the most recognized insurance companies in India in private sector on the basis of premium collected. For year 2019 the premium collected was more than 300 billion. It is well known for its process improvement efforts. Cutting-edge technology has become an integral part of company's business processes. ICICI has added layer of precision and convenience for its customers by introducing

digital technologies. It is pioneer in innovations like bots for auto servicing, facial recognition checks, Since long company is focusing on leveraging ecosystems, collaborating with internal stakeholders and partners for enhanced experience and productivity. In the year 2018, company has started focusing more on market leadership with the help of IT as an enabler for Business innovation.

The various stages of policy process like pre sales, onboarding and issuance, customer servicing and claims, marketing and lead generation and analytics are highly automated. Following are the little technological advancement applied by the company right from the pre sales to analytics stage-

- My Coach – AI Platform for video-based library creation for sales pitches.
- Robotic Enabled Issuance – Robotic processing for faster issuance of insurance policies.
- AI assisted Underwriting – Empowers underwriters with insights for speedy and comprehensive decision making.
- AI based Claim Processing – AI based pre claim assessment and claim processing with speed, efficiency and convenience has been implemented successfully.
- Bot Orchestration Layer – Universal bot with voice capability to cater to all touch points.
- Humanoid – AI based conversational tool positioned for reminder calling of renewal premium of insurance policies.
- Rank high on online searches – ML is used to rank the company higher when customers search.
- Selfie Quote – AI backed quote based on facial recognition.
- Google Big Query, Hadoop, Python – using best technology available to process the data.
- Data Lake Solution – Use of AI and ML to analyze structured and unstructured data.

3. SBI Life Insurance:

With 922 branches and offices, SBI Life operates throughout India. Digitisation is certainly helping SBI life to expand its reach. SBI Life has seen manyfold rise in e-sourced

policies. SBI YONO, was a great success because life cover is provided in just three clicks. SBI Life also provides video based KYC in addition to Optical Character Recognition to read and recognize the KYC document's data and validate the same with proposal form data. Further to reduce on staff dependency, the company has used AI enables facilities for tracking cases, status updates etc.

4. HDFC Life Insurance

It is a joint venture between HDFC and Abrdn, a global investment company. The company had insured over 20 million policies in both segments with highest margins in the business, with 25% in first half of 2019. HDFC Life 's AI usage is divided into the following key areas:

- Text AI: Bots have enabled the company to automate processes to improve performance. Some of the bots are SPOK, ETTY, Zoey and Neo, which extends service experience to customers 24x7. The company uses natural language processing to power the conversation engine.
- 'ETTY' used to automate routine calls. 'ETTY' supports more than 650 service queries. It has served 6.5 lakh users and has handled more than 35 lakh queries with a 94 per cent accuracy.
- Vision AI: These applications include - 'FaceSense', 'Bodmeter' and 'Age Tymer' 'FaceSense' application, which is used for facial authentication of the customer, has processed over 40,000 cases year to date and processes almost 600 cases daily in the HDFC Life branches. It is used to mitigate risk of incorrect payouts at branches. Customers walking in for payouts are asked to take a simple picture then it is compared with the image at the policy inception, thus ensuring the same customer.
- Voice AI: These applications include - 'Ezra' (Google Assistant), 'Elsa' (Alexa) 'SVAR' and 'InstA'. 'Ezra' and 'Elsa' have seen over 1,000 inquiries so far. The voice bot 'SVAR' is available in 14 Indian languages. It reaches out to 4.5 lakh customers every month for payment collections. Approximately ₹3.5 crore of payment per month is attributed to this bot.

It has 14,500 active sales users. It is being used across all the branches and 17 call centres, addressing over 17 lakh queries.

- Machine learning: These applications include - Propensity, Risk and Customer Retention models. Cloud computing has helped company to increase scalability and enabled customisation. It currently has 25 cloud-native products with most of the applications migrated to the cloud platform. AI has aided the company in many areas such as underwriting engine, risk mitigation, sentiment analysis, hyper-personalisation of sales incentives.

5. Max Life Insurance:

It is a joint venture between Max Financial Services and Mitsui Sumitomo Insurance Company. Its current claim settlement ratio is 98.74%. Max Life Insurance's AI usage can be divided into the following key areas:

- Machine Learning & NLP for Sales Team Support: The company is implementing machine learning models to help the sales team focus on promising leads with high probability of conversation into sales. The company has also built the NLP-based conversational virtual sales assistant which supports the sales agents throughout the sales journey - right from product suggestions by sales person to the product interrogation and query handling on the go over WhatsApp.
- Smart Algorithms and Machine Learning for Customer Segmentation: The company makes use of CRMs of bank-assurance partners and the industry databases to know more about the customers. This saves on onboarding time and lengthy documentation procedure. The company uses smart algorithms and machine learning for customer segmentation. It uses AI models for the right risk selection and pricing.
- AI to Support Banking Partners: The company has built the AI-based campaign engine, Suraksha, with banking partners to offer customised PASA proposals depending upon customer need, risk return trade off and recommending the most suitable product for the customers.

- **AI in Underwriting:** Shield & Fincheck, the predictive underwriting engine of Max Life Insurance assesses the likelihood of an early claim, policy lapse and risk of fraud upfront. It also intimates if any additional verification is required by an underwriter for any policies. This helps the company in fast policy issuance, identification of risky and fraudulent policies at the issuance stage rather than rejecting them at the claims stage. Deep learning-based face-matching algorithms is used at the application stage to verify customer's photographs with the proof of identity to further assess risk. The application can also accurately read KYC document scans, validate and digitise the details automatically.
- **AI in Policy Servicing:** The company uses a combination of machine learning and NLP-based techniques and has developed the AI-based automated IVR and email intent prediction engines to identify customer calls and email contents to provide quick solutions. The voice call data from renewals and customer servicing teams, is accessed by the speech engine – VOX. Linguistic speech models are used to infer the script and customer sentiment across these calls and thereby managing the unstructured data.

6. Kotak Life Insurance:

It is founded in 2001 which caters 15 million customers and has 232 branches in India. Kotak life insurance's digital journey can be divided into key areas such as New Business Opportunities, Customer Experience and Distribution Ecosystem. Building a good support system for its employees is one more dimension of company's digitalization. Kotak Life Insurance claims that their, 98% of its data center workload is virtualized. Kotak Life Insurance uses AI in the following key areas:

- **Text AI:** Limited customer interaction is one of the challenges faced by insurance industry. Kotak has deployed an assistive bot that could help customers even if they don't remember their login Id and password. The bot is designed with artificial intelligence and machine learning

algorithms with an aim to solve customer's doubts and queries in a most efficient manner. Kotak chat bot has served as a solution to call center time bound limitations and served 53% more customers in a user friendly and adaptive way.

- **Voice AI:** KAYA is developed to enable the customer experience with instant solutions. It can handle multiple queries related to payment, policy statements, policy information and policy renewals.
- **Vision AI:** Vision AI system is started by the company to check the annuitant's liveliness. Automation of submission of certificate of existence using AI is done by uploading latest photograph through application and AI verifies whether the person is alive or not.

The company is working on AI based fraud analysis and has already working on open-source software and datafication of business interactions, private life and public life.

Discussion

The insurance sector in India is prospering at an enormous growth rate. With growing middle-class population, people recognizing importance of risk transfer and retirement planning, the expansion of insurance sector is enviable. The secondary data related to six select insurance companies clearly indicates that the insurance companies in India have recognized the increasing importance of technology implications in customer-facing as well as employee-facing operations.

The leading insurance companies in India are establishing and using the automated underwriting, taking support of machine and deep learning methods, experiences more insurance purchase with AI enable distribution network. Automation in claim processing with AI handling initial claims is leading to improved efficiency and high accuracy. Still there is a scope for enabling more complex AI and ML applications in insurance operations and thereby facilitating the customer and employee convenience.

Conclusion

AI is not new in India and we know the engineering and research professionals have

been experimenting with various AI enabled technologies for social revolution. AI enabling technologies in insurance sector are becoming more accessible and inexpensive for insurance companies plus there is an easy access to internet facilities to the end users, making it desirable to all the stakeholders. It is estimated

that AI will help Indian economy to add approximately \$1 trillion in next twenty years. AI adoption is still in its budding stages and it has got tremendous potential to grow in nearing future. There is huge scope for AI in insurance operations which can be explored with time.

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REINVENTING HR WITH AI

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ABSTRACT

Artificial intelligence is going to take over a large part of the organizations and with these quickly changing technologies we must develop certain skillsets to adapt artificial intelligence. No doubt artificial intelligence is going to make everything easier, but we must make sure that we must use AI efficiently. As strategic HRM is gaining recognition in upcoming HR world, artificial intelligence will help reduce the repetitive tasks of HR and help them be more strategic. The study is aimed at analysing the perception of HR professionals towards adapting artificial intelligence and which branch of human resource do professionals think artificial intelligence will be adapted the most. To do so, a pilot study was conducted, and the data was collected from the human resource professionals to understand their perception on artificial intelligence. The findings of this study will help to know that employees are ready to adapt AI and believe that they have the skills to work with AI efficiently, but the employees are not yet ready to fully depend on machines for some tasks and employees are not sure if they will be comfortable of having robots as their co-workers. Human resource professionals think that recruitment will be the branch where artificial intelligence will be adopted the most.

Keywords: Artificial intelligence, Human resource, Recruitment, Perception, Strategic HRM,

Introduction

Artificial intelligence is the ability of machines to act and think like human and work intelligently. Artificial intelligence is said to cause disruption in all sectors of industry and human resource is no exception. It is said that by 2022-2025 AI is going to take over a large part of the organizations and with this quickly changing technologies we must develop certain skillsets to adapt AI. No doubt AI is going to make everything easier, but we have to make sure that we have to utilize AI efficiently. As strategic HRM is gaining recognition in upcoming HR world, artificial intelligence will help reduce the repetitive tasks of HR and help them be more strategic. Everyone has accepted the fact that artificial intelligence is going to change human resource drastically but there is an unclear picture of how we are going to adapt these changes efficiently. This study will try to know the perception of professionals towards adapting AI in HR. It will help us to find whether the employees are ready to accept robots as their co-workers, if HR ready to depend on machines, moreover it will help to us to know that will HR be more innovative and

effective with the emergence of AI and if this pandemic will help us in adapting AI more quickly as we are now becoming more and more familiar to the virtual world and becoming more efficient in using machines. Hence this study is an effort to know the perception of HR professionals towards adapting artificial intelligence.

Literature Review

Artificial intelligence is a machine which can perform tasks intelligently like any other human while adapting to changes in the world. AI can be applied in sectors of industry, for financial sector to detect fraud, and enhance customer service by understanding customer requirement. It is also be used in manufacturing sector to detect faults prior to production process and reduce maintenance. In an article what Artificial Intelligence will look after covid-19 by Kenrick Kai says that many founders are trying to imagine workplace post covid which will accelerate the spread of AI. AI is safe and AI would be synonymous with the word safety. A study conducted on employees and managers and HR leaders from many countries reflected that artificial intelligence

has increased the penetration of technology among people in the workplace and is transforming the role of HR. The challenge of recruitment process where more time an HR have to invest for approvals and also the screening can be overcome with the help of artificial intelligence as it will assist to find the right candidate at the right time by shortlisting the best candidate by matching the job requirement and skills of the candidate. In an article how artificial intelligence is transforming HR, *Laurie Carantit* states that AI can take over some tasks such as employee questions about policies and procedures giving the HR professional time to focus upon engaging and motivating employees, formulating different strategic tasks than can help in the success of organization. *Annette White-Klososky* wrote in her article about innovation in technology is happening at a fast speed and the emergence of AI is beneficial for Human resources. But he also warns that adapting AI could be a quite staggering task and HR people are not sure where to start from. Nowadays employees change jobs frequently and it becomes a challenge for a HR to retain great talents hence the HR must modify the experience of employee. AI will allow and help a HR professional to deliver a more customized experience to their employee. *Maja Nowak* in an article wrote about how AI is transforming human resources. She mentions some AI based applications that enable you to use AI in HR. Textrecruit is a chatbot that can be used in recruitment. Gohire is another AI based recruiting application that enables you to text recruit, Ascendify aspire is an intelligent career assistant that can help in employee growth, Everwise is also a talent development app that helps employee to improve and build employee skills.

Objectives Of The Research

- 1) To understand the perception of HR professionals towards adapting AI
- 2) To explore the impact of AI on human resource

3) To identify in which branch of HR, AI will be used the most.

Limitations Of The Study

- 1) The study is based on responses received by those who have access to smart phones/internet. A total of 275 responses were received from various cities.
- 2) This study is conducted in current scenario. The perceptions, opinions and behaviour of the respondents might change with time.

Research Methodology

This is a descriptive type of research. This research includes primary as well as secondary data. The sampling method used is stratified random sampling.

Methods of data collection

Primary data: The primary data collection tool used is a questionnaire. Responses on questionnaire were collected by an online method which was through Google forms. The questionnaire prepared consists of questions which were close ended. The respondents were HR professionals of service sector of Pune city. The sample size used for this study is 300; these samples were chosen through stratified random sampling method.

Secondary data: Secondary data was collected through websites, journals, and articles published online through various sources.

Data Analysis

1. Employee's comfort working with robots and machines

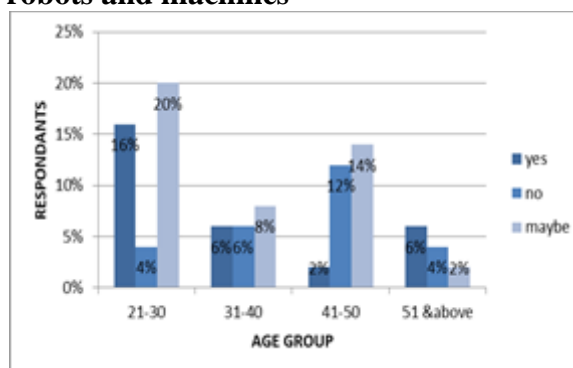


Figure 1: Employee's comfort working with robots and machines

42% of respondents from the 21-50 are uncertain about working with machine and robots to such a greater extent and people from age 51 and above say they will be comfortable working with robots and machines to a greater extent. Majority of the respondents from age 21-40 say that artificial intelligence would be largely adapted for recruitment while people from age 41-50 think it would be largely used for administrative work and people of age 50 and above say that it would be mostly used in administrative type of work as well as in on boarding and employee training.

2. Whether AI will be equally beneficial to large organizations where there are hundreds of CV’s coming in and as well as small organizations including startups

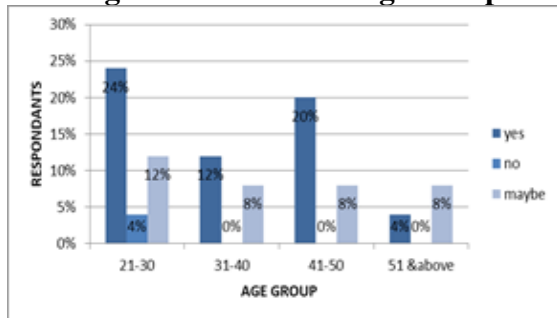


Figure 2: AI beneficial to large organizations

56% of the respondents from age 21-50 say that adapting AI will be equally beneficial to small as well as large organizations and people in the age 51 and above are not sure whether it will be equally beneficial for small as well as large organizations.

3. Whether respondent has the skill-sets required to work with AI in HR

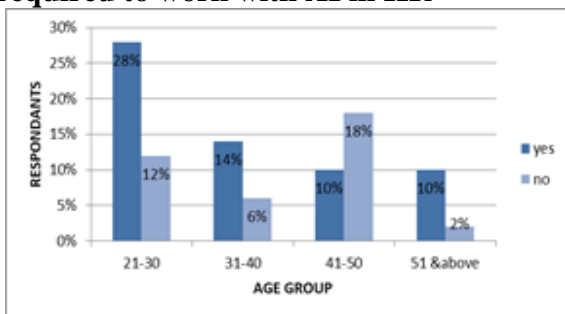


Figure 3: Skill-sets required to work with AI in HR

Majority of the respondents from age 21-40 and 51 and above are confident that they

have the skillsets required to work with artificial intelligence and people from age 41-50 say that they do not have the skillsets required to work with AI.

4. Whether the organization is ready to adopt AI

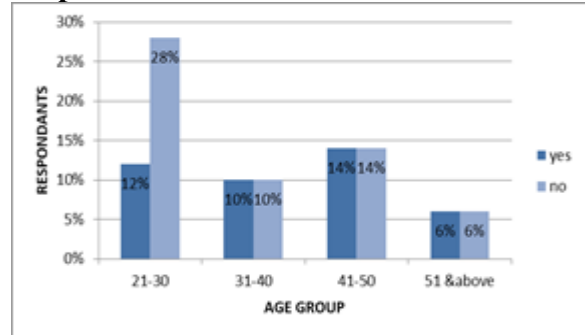


Figure 4: Organization is ready to adopt AI

Most of the people of age 21-30 say that their organization is ready to adapt AI whereas equal people from the age 31 and above say that their organization is not ready and ready to adapt to AI.

5. Whether AI will help eliminate biasness completely

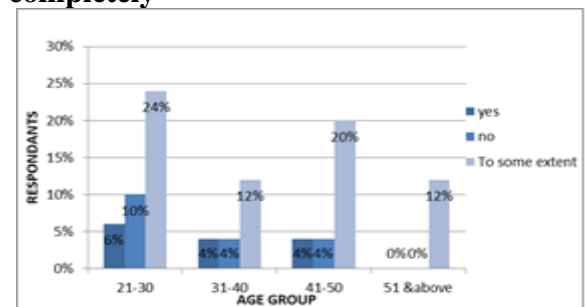


Figure 5: AI will help eliminate biasness

68% of the respondents say that adapting AI will help in eliminating biasness to some extent.

6. AI can also help managers to know about any external achievements of the employees

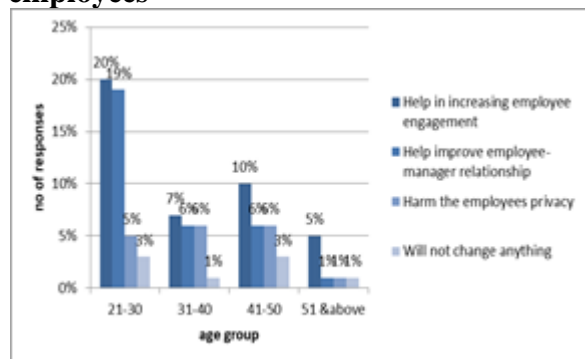


Figure 6: Effects of AI

Majority of the respondents believe that AI will help in increasing employee engagement as it can also help managers know the external achievements of the employee.

7. As a HR, whether to rely on machines/robots for screening and sourcing candidates

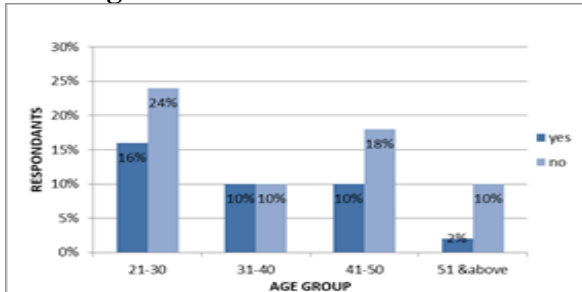


Figure 7: HR rely on machines/robots for screening and sourcing candidates

Many HR’s are not comfortable with the idea of relying on machines and robots for screening and sourcing of candidates.

8. With the automation of AI as there will be less human connection, whether it will be reduced

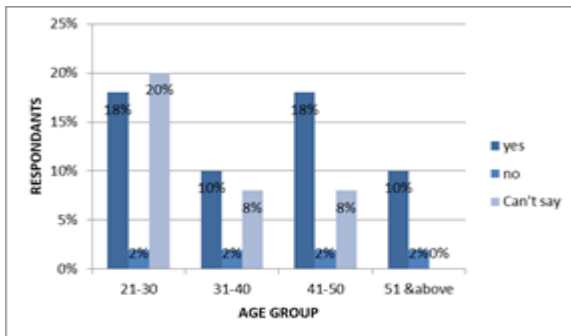


Figure 8: AI will reduce human aspect

Many respondents from the age 21-50 say that they cannot say if adapting AI in HR will take human aspect out of human resource and most of the people of age 51 and above equally agree and disagree with the statement. People from age 31 and above feel that as with adaption of AI there will be less human connection this will affect the loyalty of the employees towards the company and people of age 21-30 are not sure if adapting AI will affect the loyalty of the company.

9. Whether employees will be optimistic about having robots as their co- workers

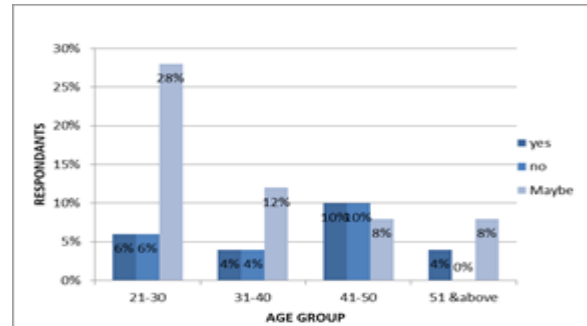


Figure 9: Employees will be optimistic about having robots as their co-workers

Most people from age 21-40 and 51 and above are not sure if employees will be optimistic about having robots as their co-workers and people from age 41-50 think that employees will be optimistic about having robots as their co-workers.

10. Whether employees are ready to adapt AI

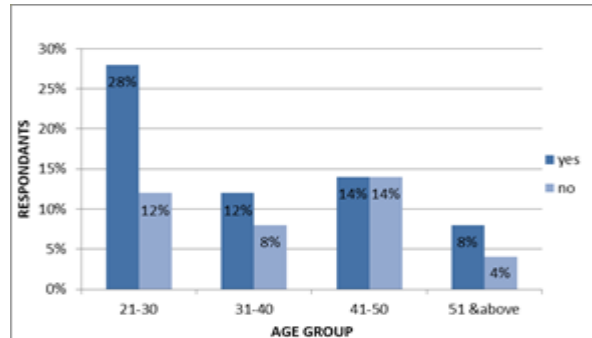


Figure 10: Employees ready to adapt AI

Most of the people think they have the skillsets and are ready to adapt artificial intelligence.

11. Whether adapting AI in HR will make HR more innovative and effective

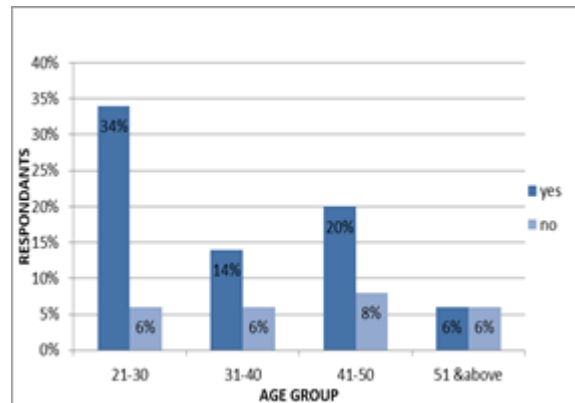


Figure 11: AI will make HR more innovative and effective

Many people think that adapting AI in HR will make human resources more innovative and effective.

12. Whether this pandemic will help speed up the process of adapting AI as we are now becoming more and more familiar and dependent to virtual world

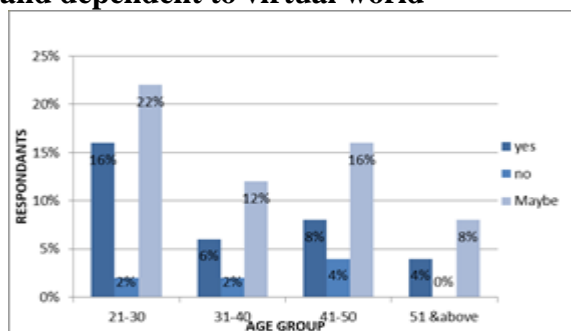


Figure 12: Pandemic will help speed up the process of adapting AI

Most of the people are not sure if the pandemic will speed up the process of adapting AI as we are becoming more familiar to the virtual world.

SUGGESTIONS

1. Organizations must develop culture so that even after adapting AI, the human connection must not be lost and in turn will not affect the loyalty of the employee towards the company.
2. HR professionals still vary on opinion about depending on chatbots, robots etc. for screening and sourcing candidates this could be because of the lack of knowledge or because of lack of trust on the efficiency on the machines, or because of insecurity of their job hence organizations should take

adequate measures to develop trust and knowledge regarding the new revolution in the employees.

3. Organizations should also update employees of how new technologies can be adapted in different sectors and that artificial intelligence is not just limited to recruitment but also can reduce the monotonous work of a HR and can also help in training employees.

4. Organizations should also investigate how their employees will not feel insecure about their job and work efficiently and effectively with artificial intelligence.

Conclusion

Artificial intelligence has taken over a large part of the organizations and with quickly changing technologies; organizations must develop certain skillsets to adapt artificial intelligence. Artificial intelligence will help reduce the repetitive tasks of HR and help them be more strategic in today's era. This research will certainly help to know that employees are ready to adapt AI and also believe that they have the skills to work with AI efficiently. Employees are not fully prepared to work on machines for some tasks. AI is going to make everything easier, but we must make sure that we have to utilize AI efficiently.

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REVIEW OF DRIVING FACTORS OF ONLINE BUYING- FUTURE RESEARCH AGENDA IN LIGHT OF INDIAN YOUNG ONLINE CONSUMERS

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ABSTRACT

There have been attempts of understanding the factors of online buying, which always created interest, challenge and focus of studies since the time online buying has taken rise. Past studies in this endeavour understood these factors in the direction understanding the factors of driving online buying of Young Indian buyers/Consumers. But these studies were found to be fragmented, done in silos and needed consolidated approach for further research studies. This paper attempts to fill this gap of being the first paper to propose the future agenda on understanding the factors driving the online buying of Young Indian Consumers. In this paper we propose eight futuristic propositions to set the agenda of future study in this direction.

Keywords: Online buying, Online Trust, Factors of online buying, Young Indian Online Consumers, e-retailing

1. Introduction

Understanding the factors of online buying has been always a challenge and focus of studies since the time Online buying has taken rise (D. Bhalerao,2021). The studies in this direction, have attempted to understand these factors, but Studies in the direction understanding the factors of driving online buying of Young Indian buyers/Consumers are fragmented and need consolidated research studies. This paper attempts to fill this gap of being the first paper to propose the future agenda on understanding the factors driving the online buying of Young Indian Consumers. In the next section, we present the glimpse of past studies to understand the scope of past studies. In analysis section we have presented the analysis in the tabular form to understand the deep connect between factors. In discussion section we present eight propositions followed by the conclusion section.

2. Theoretical Literature Review background

Past studies were focused on many aspects of factors of online buying, including Factors of Online Buying Risk, Factors of online trust-Service Experience, Factors of online trust-Website Experience, perceived technology, and online purchase intention Online Trust, Factors of e- retailing and Factors of E- WOM (E-Word of Mouth) to be mentioned prominently. In this section we explore them briefly and also mention them in

tabular manner to understand them one by one.

2.1. Factors of Online Buying Risk

Past Studies have been done on the mentioned areas namely- Damaged/Wrong Delivery, Stress, Financial Risk by Dr. Suresh A. M. and Shashikala R. (2011). Another key study by Qing et al (2015) Focused on Systematic Risk, Transactional Risk.

2.2. Factors of online trust and Security

Many Studies were done to inspect multiple dimensions of online trust related factors such as Online service Experience (Sandip&Mital 2012), Website Experience, Online Experience(Tyagi and Agarwal 2012), Online Privacy (Adeline et al 2006), Promotion Intention (Subhashini et al 2010), Perceived Integrity, Perceived Competence(Subhashini et al 2010), Brand Trust Safety, Information Quality, Brand Image, WOM Online service Experience (Hong Lee 2004), Service Quality(Mohammad and Samar 2012), Motivation, Attitude (Sangeeta et al 2013),Privacy Non-deception, Perceived Value, (Gizem and Gungor 2010) and issues such as Trust-Distrust(Gregory et al 2014). These studies were not done mostly on the young Indian consumer context.

2.3. Factors of Perceived Technology

Few Select studies were found to focus on technology related issues Online Trust, Purchase Intention (KwekChoon et al 2011)

2.4. Factors of Anxiety

In an Interesting study, it was found that anxiety related issues of emotions, perceived Risk, Online Satisfaction drive the online buying decisions (Chengwen and Shuling 2011).

2.5. Factors of Online Loyalty

Factors related to Online loyalty also were studied in studies mentioned ahead which focused on parameters prominently as Online Experience, Online Information Content, Website entertainment content Online, Brand Trust, Online Ease of Use (Treiblemaier et al 2011), (Talal and Charles 2011), Web experience, Tech Acceptance, e-satisfaction, Web Service quality, Specific holdup cost (Grace and Chia-Chi, 2009) and Online Credibility (V.Srikanth, Dr. R. Dhanpal, 2012).

2.6. Factors of Demographics

Demographics was also found to an area driving the online buying decisions, as the deviation varied from element to element of demographics depending upon the factors of Technology Factors, Internet Platforms, Internet Media (Muthumizh 2010), Cultures, Nationalities (Jiyoung et al 2013), Age wise demographics (Juxt Consult's 'India Online' 2008), Education categories- student and non-student (Siohong et al 2008) and Nationalities, Geographies (Jiyoung et al 2013)

2.7. Factors of E-retailing

Not only the issues related to the consumer, but the parameters or factors related to the company side i.e. of the e-retailing also played important role in driving the online buying. Past studies found that Effectiveness of e-retailing, Data Analysis of Consumer Behaviour, Consumer buying pattern (Ellis et al 2007), Online buying stages, Prebuying, Buying, post buying phases, 3 C's- Core offers, Complementary, Benefits, Cost of Operations (SitaMisra 2009), E-service quality, 2 Dimensions of E-Service quality, Incubative and Active (Jessica 2003), Three perspectives – Retailer, consumer, technological perspectives (Doherty et al 2006), Insecurity of Internet payment in internet transaction (Ajeet et al 2012, Agwu 2012), Marketing and customer relations activities, Marketing targeting activities,

Marketing performance and Marketing efficiency (Riyad and Yasser 2012). It was found that The two categories of success factors - online and offline, Online factors-Trust, Word of mouth, Technology and design, emotional connection, offline factors-name, equity, advertising, loyalty and satisfaction, drive the online buying. (Riyad E. et al 2011). These are driven across Three Stakeholders, Consumer, manufacturer, retailer (Robert et al 1997). Depending on these parameters e-retailers have Online and offline retail strategy Going offline from online (Mohammed and Heather 2005), where KM- Knowledge management and Behavioral Business Intelligence plays a Major role (Archana and Ujwal 2012). These studies were reflections of many past theories such as - Theories used in understanding online retailing factors predominantly - TAM, TRA, TPB Theories (Rajesh and Biranchi 2013)

2.8. Factors of E- WOM

While talking about the studies on growing the e-retailing, E-Word of mouth has always played a key role. Past studies have reflected that through parameters of e-WOM namely related to intention to visit, attitude towards hotel and buying intention (Manel and Rym 2013), Reviewer's characteristic, Reviewer Details, Reliability of the website, Significance of the reviews, Type of review suggestions, Price of the products (Ali and Murat 2012).

3. Literature Review Analysis

In the table- I, it is mentioned that how each factor is associated with/ driven by these key sub factors and a systematic representation of the past studies is given for better and clear understanding of the past studies. These studies reflect two major issues –

1. The study is mainly fragmented and needs a consolidation.
2. The future agenda of research should be based on some futuristic propositions in the context of Indian young online consumers.

Table 1- Key Studies done on Factors of Online buying-

Factors of Online buying	Sub factors	Author
Online Buying Risk	Damaged/Wrong Delivery, Stress, Financial Risk	Dr. Suresh A. M. and Shashikala R.2011
	Systematic Risk, Transactional Risk	Qing et al 2015
Online Trust	Online service Experience	Sandip&Mital 2012
	Website Experience, Online Experience	Tyagi and Agarwal 2012
	Online Privacy	Adeline et al 2006
	Promotion Intention	Subhashini et al 2010
	Perceived Integrity, Perceived Competence	Subhashini et al 2010
	Brand Trust Safety, Information Quality, Brand Image, WOM Online service Experience	Hong Lee 2004
	Service Quality	Mohammad and Samar 2012
	Motivation, Attitude	Sangeeta et al 2013
	Trust-Distrust	Gregory et al 2014
Online Security	Privacy Non-deception, Perceived Value,	Gizem and Gungor 2010
Perceived Technology	Online Trust, Purchase Intention	KwekChoon et al 2011
Anxiety	Emotions, perceived Risk, Online Satisfaction	Chengwen and Shuling 2011
Online Loyalty	Online Experience , Online Information Content, Website entertainment content Online, Brand Trust, Online Ease of Use	Treiblemaier et al 2011, Talal and Charles 2011
	Web experience, Tech Acceptance, e-satisfaction, Web Service quality, Specific holdup cost	Grace and Chia-Chi2009
	Online Credibility	V.Srikanth, Dr. R. Dhanpal, 2012
Demographic Factors	Technology Factors, Internet Platforms, Internet Media	Muthumizh 2010
	Cultures, Nationalities	Jiyoung et al 2013
	Age wise demographics	Juxt Consult's 'India Online' 2008
	Education categories- student and non-student	Siohong et al 2008
	Nationalities, Geographies	Jiyoung et al 2013
Factors of e-retailing	Effectiveness of e-retailing, Data Analysis of Consumer Behaviour, Consumer buying pattern	Ellis et al 2007
	Online buying stages, Prebuying, Buying, post buying phases, 3 C's- Core offers, Complementary, Benefits, Cost of Operations	SitaMisra 2009
	E-service quality, 2 Dimensions of E-Service quality, Incubative and Active	Jessica 2003
	Three perspectives – Retailer, consumer, technological perspectives	Doherty et al 2006
	Insecurity of Internet payment in internet transaction	Ajeet et al 2012, Agwu 2012
	Marketing and customer relations activities,	Riyad and Yasser 2012

	Marketing targeting activities, Marketing performance and Marketing efficiency	
	. The two categories of success factors - online and offline, Online factors- Trust, Word of mouth, Technology and design, emotional connection, offline factors- name, equity, advertising, loyalty and satisfaction	Riyad E. et al 2011
	Three Stakeholders, Consumer, manufacturer, retailer	Robert et al 1997
	Online and offline retail strategy Going offline from online,	Mohammed and Heather 2005
	KM- Knowledge management as Major tool, Behavioural business intelligence	Archana and Ujwal 2012
	Theories used in understanding online retailing factors, , TAM, TRA, TPB Theories	Rajesh and Biranchi 2013
Factors of E-WOM	Intention to visit, attitude towards hotel and buying intention	Manel and Rym 2013
	Reviewer's characteristic, Reviewer Details, Reliability of the website, Significance of the reviews, Type of review suggestions, Price of the products	Ali and Murat 2012

3. Research Methodology

This study was done through the review and critical analysis of the past literature and based on the select papers and the tabular representation of the study is prepared to know that how the study progressed.

4. Discussion

Based on the above literature review analysis, we propose following important futuristic propositions to be studied in the future course of time and research to be conducted on these propositions. Hence, we put forth following research agenda propositions-

P1- Online Risk has significant association with/Impact on Online buying Trust.

P2- Online Security has significant association with/Impact on Online buying Trust

P3- Online perceived Technology has significant association with/Impact on Online buying Trust

P4- Online Anxiety has significant association with/Impact on Online buying Trust

P5- Online Demographics has significant association with/Impact on Online buying Trust

P6- Factors of e- retailing has significant association with/Impact on Online buying Trust

P7- E-WOM has significant association with/Impact on Online buying Trust

The past studies have separately studied in the silos to focus on the factors of online buying. These studies show that the online trust is a function of many other variables mentioned in above analysis of literature review. Hence, we have proposed these seven propositions of online trust.

P8- Online Trust has significant association with/Impact on Online buying Loyalty

This 8th Proposition plays the role of bridging the connecting dots between the parameters of this study. Hence, we propose that the online loyalty and online trust has significant associations and impact driven relationship. We strongly advocate that these propositions should be tested with the empirical approach of research in future.

5. Findings

The findings of this paper are for the first time being proposed in such consolidated manner on this topic of factors of online buying in the context of Young Indian Online consumers. The futuristic agenda in terms of the 8 propositions, will contribute

significantly to drive the future research in this context. Adding to the work done by past studies for development of this research, this paper has achieved the success in weaving the entire research into a very structured futuristic agenda. The major findings of this paper are the eight propositions.

6. Conclusion, Limitations and Future Scope

This is the first paper to unfold the factors of online buying on this comprehensive level. In the context of young Indian online consumers. Our eight research propositions

pave the way for strong future research with significant contribution to the new knowledge creation on this area of research. The limitation of this research is that this study was done in only secondary sources of data. This study can be conducted in future in the empirical manner in both quantitative and qualitative manner. In the current context of changing buying behavior of the young Indian online consumer, this study will be very critical to all the stakeholders of online buying phenomenon in offline, online and omnichannel scenario.

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COMPREHENSIVE INDIAN AND INTERNATIONAL REVIEW OF LITERATURE ON BEHAVIOURAL FINANCE

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ABSTRACT

The study is divided into two categories; research contributed by Indian researchers and research contributed by international researchers have been studied and analysed. It has been observed that nine predominant features such as Herding, Regret, Representativeness, Overconfidence, Anchoring and Ability, Gambler's Fallacy, Hindsight, Cognitive Conflict, Mental Accounting are prevailing biases in behavioural finance. Gender, age, marital status, annual income, and work experience are all important demographic aspects to consider when analysing the impact on investment decision making. The study of traditional finance and neo classical economics are being discussed from several decades. John Stuart Mill introduced the thought of rational economic man or also known as homo economicus in 1844. He defined an individual as a homo economicus who tries to optimise financial benefits in the given constrained. He described basic three assumptions for the thought of cogent economic man or homo economicus.

Keywords: Behavioural Finance, Investment Decision, Economicus, Cognitive Conflict, Mental Accounting

I. Introduction

Human psychological behaviour plays an importance role in investment decision making process in capital market. It is imperative to study the factors affecting investment decision in today's scenario. The research and study of behavioural finance proved that behavioural biases are relevant at the time of investment decision making process. In this research paper; attempt has been made to review relevant existing literature and it was concluded that there are number of biases which are present among investors that impacts their investment decision.

The research has been classified into two categories: research produced by Indian researchers and research contributed by international researchers. It has been discovered that nine prominent biases in behavioural finance include Herding, Regret, Representativeness, Overconfidence, Anchoring and Ability, Gambler's Fallacy, Hindsight, Cognitive Conflict, and Mental Accounting. Gender, age, marital status, annual income, and work experience are all important demographic aspects to consider when analysing the impact on investment decision making.

1. Perfect Rationality
2. Possess extreme self-interest
3. Has complete information of the market conditions

Eventually these assumptions became the base of financial economics (M. Pampian, 2011)

Investor follows rational and logical attitude to take realistic financial decisions (Nozick, 1993) Efficient Market Hypothesis (EMH) is a theory from traditional finance which states that a market where large number of investors are trading securities and wherever the significant info is easily accessible to entirely the participants. The EMH assumption is that the security market is efficient in processing all the available information.

The theory of moral sentiment was introduced in 1759 by Adam Smith. He developed theory of invisible hands where he explained the role of sentiment in decision making process.

Cognitive biases of investors have high influence on stock market. There are several psychological factors which challenges rational thinking.

During 1960s and 1970s psychologist Daniel Kahneman and Amos Tversky studies new concept in the field of finance that is behavioural finance. The study of economics, finance, and psychology is the emerging area of behavioural finance.

Definitions of behavioural Finance

Selected of the important explanations of behavioural finance are deliberated here:

1. Linter (1998) defines BF as 'the investigation of how humans understand and act on information in order to make sound investment decisions'.
2. De Bondt (2004) defines BF as 'a theory that investigates financial challenges using principles derived from cognitive psychology'.
3. Weber (1999) observes that, 'Individual behaviour and market phenomena are strongly intertwined in behavioural finance, which employs information from both the psychology and financial fields.'
4. Fromlet (2001) defines BF as 'It is a blend of the psychology field and finance theory that closely combines individual behaviour and market events and employs knowledge.'
5. Sewell (2001) state that behavioural finance has been defined as "the study of the influence of psychology on the behaviour of financial practitioners and the resultant effect on markets."

II Objectives Of The Study

1. To understand the concept of behavioural finance
2. To analyse the assessment of the prose on behavioural finance within India and foreign countries
3. Find out the research gap

Scope of the study

This study includes an introduction to behavioural finance as well as important concepts. The study focuses on the different behavioural Finance biases and analyse the review of the literature within India and other countries.

III Research Methodology

The systematic Literature Review method was used to analyse various research papers. The systematic literature review on behavioural finance allows to map and access existing literature. The second step is to conduct a thorough and unbiased literature search, selecting terms that best fit with the study's objectives. Literature has been classified in

two parts; first is contribution to the body of knowledge from Indian researchers and second is contribution from international researchers. The study also focuses on difference behavioural biases which impacts the investment decision process.

Limitation of the study

1. Research is connected to conceptual and theoretical hence there is no experiential study conducted for this research paper.
2. Discussed few literature reviews and behavioural finance biases.

IV Review Of Literature

A review of the literature entrusts a research study carried out by Indian and international researchers related to area of study that is Behavioural Finance. The objective of the review is to determine the outcomes of several research commenced in the field of behavioural finance and to find out the current research gap. Most of the researchers have undertaken study on features affecting individual investor's investment decision from different perspectives. The study is categorized in to two features, first is the assessment of studies by Indian researchers and second is a assessment of studies by international researchers.

Indian Studies

(Rajarajan, 2002) identified the connotation amid the demographic factors and the risk bearing capacity of individual investor on 405 respondents from Chennai city using research tools such as Chi-square test and other analysis. The study found that there is a positive association between risk bearing capacity& demographic factors.

(Rajarajan, 2003) studied the determinant choice of portfolio individual investor. The analysis done using multiple regression analysis. The study analysed that that there is a positive relation among risk bearing capacity, rate of return on investment and loss avoidance.

(Kiran, 2004) analysed the group of investors and categorised them in different segment based on various demographic factors and

psychological characteristics of the investors. The study has been conducted using Multinomial logistic regression and other correspondent analysis. The study is based on 96 respondents.

(Ranganathan, 2006) analysed the financial behaviour and general awareness of investor regarding mutual fund. The study is based on 100 respondents from Mumbai using multinomial logistic regression & other correspondent analysis. The conclusion of the study is that factors related to quality of fund and portfolio, quality of fund managing company and customer services to investors affects the investment decision process.

(Jain, 2008) identified that the performance of the investors between the several kinds of financial assets classes and the problem related to capital market. The study has been considered 1463 individual investor respondents. The conclusion of the study is that the investors give preference to invest in stock market as than mutual funds due to higher possibility of return on investment in stock market.

(Parashar, 2010) examined the outcome of behaviour characters on special of investment. The study is conducted on 100 investors respondent using cluster Kruskal Wallies test and other correspondent analysis. The study concluded that personality traits and demographic characteristics affects the investment behaviour.

(NCAER, 2011) analysed the behaviour of individual investors in dealing with capital market trading. The study is conducted on 38,000 households in different 44 conurbations and 40 towns. The study identified that the risk repugnance factor is extremely high in Indian households.

(Subash, 2012) investigated the influence of particular behavioural finance prejudices on investment choice procedure of retails depositors in Indian capital market by main data of 92 individual investors respondents. The study identified that the hindsight biases, fastening and gambler fallacy are the dominant

biases among younger investors than experienced investors.

(Rushdi, 2014) described the effect of numerous psychographic biases on investment pattern behaviour of salaried pros in India. The study is conducted on 1627 respondent's primary data. The study identified that demographic factors such as gender plays important role in all aspect of investment behaviour.

(Maheshwari, 2014) identified the association between age and financial planning using Chi-Square and ANOVA test. The study shows that there is statistically positive association between the process of financial planning and age of investor. The results of ANOVA test analysed that there is difference in perspective regarding process of financial planning by different age group segment.

(Sasirekha, 2015) analysed the factors of investment behaviour of retails investors who are working professionals in Information Technology in Coimbatore city. The study is conducted on 482 respondents which identified that the investment strategy is largely depend on the socio-economic characteristics. The study analysed that the behaviour biases plays major role in the process of investment decision making process.

(Shinde C.M., 2015) examined the influence of demographic profile on depositor's scale of risk lenience concerning choice of investment using Mann Whiteny 'U' test and other correspondent test on 670 investors from Pune city. The study determined that the demographic profile of individual depositors such as gender, level of education, income segment, age the investor's scale of risk tolerance.

(Kandpal V., 2018) examined the individual investors of the Dehradun city on 358 respondents. The study concluded that the Investment decision in India is taken into consideration by perception, by word of mouth, Investment decision in India is not taking seriously, and rather it is done quickly and no proper detail study take place. Behavioural

Finance is considered to be the important element in the investment decision making in Indian Capital Market.

International Studies

(Thaler, 1985) states that several depositors face delinquent to determine investment choice making under uncertain circumstances because traditionally investor's decisions are based on rule of probability. But in reality, most of the people overreact to unexpected news and it impacts the buying and selling decisions of the stocks. The sentiments play important role in decision making process.

(Warren, 1990) identified various segment depend on the lifestyle and demographic factors of the investors. The study is based on 152 respondents. The study showed the segmentation based on their investment behaviour. The investor behaviour is classified in to two categories, active traders and inactive investors as well as heavy transaction volume and light transaction volume depositors.

(Massa, 2002) identified two different parts of investment behaviour, first is risk captivating characteristic which includes loss aversion, and mental accounting and second is stock choosing with information-based knowledge and pure fundamental knowledge. The researcher examined the influence of behavioural biases on risk appetite and stock selection pattern, the study attentive on behaviour with regards to long term holdings of investors with a yearly prospect. The study shows that there was an influence of losses and gains on investor risk taking ability but not on mental accounting.

(Thaler B. a., 2003) examined behavioural finance biases, scenarios of market competence, investor psychographic factors, limitations to level of arbitrage, and behaviour & beliefs of individual investors in detail. The study focuses on application of behavioural finance to various segments like individual investors and capital market and corporate finance that is fund manager's behaviour.

(Wood, 2004) described the characteristics of various investors into multiple segment based

on their investment pattern and attitude as well as behaviour using main data of 90 respondents. The study identified that the retails investors can be classified into level of tolerance, confidence level of traders, loss aversion traders and traders who are very conservative and looking for long-term investment.

(Pompian, 2006) identified that biases are mainly classified into two types, Emotional biases and cognitive biases. The study identified seven different emotional biases, those are Status Quo Bias, Regret Aversion Bias, Loss Aversion Bias, Confirmation Bias, Optimism Bias, Self-control bias and Endowment Bias. Cognitive biases are categorised in thirteen different biases, Availability bias, framing bias, Self-Attribution bias, Overconfident bias, Cognitive Dissonance bias, Hindsight Bias, Mental Accounting, Anchoring and Adjustment bias, Ambiguity bias, Representative Bias, Conservatism Bias, Illusion of control bias, Recency bias.

(Al-Ajmi, 2008) examined the level of risk lenience of retails investors in Bahrain. The study considered 1484 respondents. It has been observed that the individual investors who has more financial responsibility and other liabilities has less level of risk tolerance.

(Matoussi, 2009) examined the psychographic characteristics that impacts the investor's behaviour in Tunisia considering 92 stock brokers as respondents. The study identified that under confidence, conservatism, precaution, and information inferiority complex are the factors impacting behaviour of investors.

(Joost, 2011) identified how investor's behaviour change and their impact during 2007-2009 financial crises primary data of the clients. The study concluded that investors who has high risk appetite have more turnover of investment transactions as compare to those who have lower risk tolerance level.

(Bikas E., 2012) analysed the influence of behavioural biases like cognitive and

emotional biases, psychographic impact on the financial decisions making process of amateur retail investors. The researcher used historical data to determine perception of investors through comparison of different types of investor and descriptive method to analyse the influence.

(Athur, 2014) examined behavioural characteristics that impact the retail investors' investment decision in Kenya. The study conducted on sample of 30 retail investors. It analysed that cognitive biases such as representative biases, deception of control, herd mentality, hindsight biases contributed positive correlation with individual investor's decision whereas over-optimism, regret aversion, loss aversion and self-attribution were not positively related with individual investment decision.

(Roberta, 2017) studied factors such as cultural difference, stability, investment and cultural transmission in 38 countries. The study concluded that the impact of such factors influence the decision making process of retail investors.

It is concluded from the analyses of above literature that all the contribution of study in the body of knowledge are mainly on behavioural aspect, psychographic characteristics, different traits of personality, perspectives and biases. Most of the literature is based on primary data in different geographies, however in Indian context, not much research contribution in the area of financial behavioural biases and their influence on retail individual investor's investment decision making process. There is no recent study which shows comprehensive study related to analysing influence of behavioural finance biases on investment decision making process of individual retail investor.

V Problem Identification & Research Gap

After undertaking detailed study of research done in the field behavioural finance, one important part of research gap in India is that most of the researchers considered consumer behavioural perspective. However International study is more focused to understand behavioural finance and its impact on investment decision. Hence there is a need of study detailed financial behavioural biases and it has influence on investment decision making process, their perception. It is important to study the different biases that exist among investors. This is a completely new approach in the fundamental study of theory of behavioural finance for economic decision and behaviour of individual investor in Indian stock market. The study will help immensely to the stake holders of Indian capital market.

VI Conclusion

In concluding, the recent financial and investment scenario in capital market shows significant influence of individual investor behaviour. It is imperative to study the behavioural biases and its impact on investment decision making process. The study will immensely help to stakeholders in capital market such as regulators, brokers, financial institutions and retail investors. We can say from above literature review that behavioural finance has a vital role in financial decision process of retail investor. In India, the participation of retail investors witnessed 40% rise post pandemic hence this is the right time to consider and evaluate behavioural biases and their influence on individual retail investor's investment decision process and overall impact on financial market.

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STUDY OF MACHINE LEARNING ALGORITHMS FOR STOCK PRICE PREDICTION**S. S Zalte¹, P. N. Patil², S. N. Deshmukh³**¹ Department of Computer Science, Shivaji University, Kolhapur.^{2,3} Department of Computer Science, Vishwakarma College of Arts, Commerce and Science, Pune.¹sheetal.zaltegaikwad@gmail.com, ²pnpatil@vcacs.ac.in, ³sndeshmukh@vcacs.ac.in**ABSTRACT**

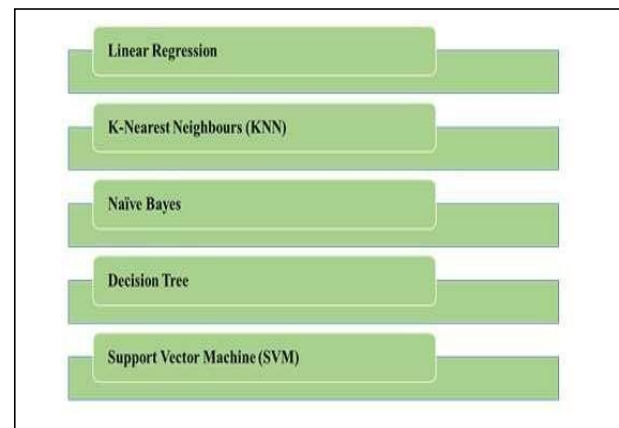
Stock market investigation empowers financial investors to distinguish the inherent worth of a security even prior to putting resources into it. All securities exchange tips are formed after intensive examination by specialists. Stock experts attempt to discover action of an instrument/area/market in future. By utilizing prediction analysis of stock, financial investors and brokers show up at value purchasing and selling choices. Prediction research analysis of stock prior to making a speculation is an unquestionable requirement. It is exclusively after a careful exploration that you can make a few suppositions into the worth and future exhibition of a stock price. Regardless of whether you are following stock exchanging tips, it is ideal to do some examination, just to guarantee that you are making a trade that is relied upon to get you the most extreme returns. In this paper, we introduce various techniques used to predict share price in the stock market.

Keywords: Machine Learning, Linear Regression, K-Nearest Neighbors, Naïve Bays, Decision Tree, Support Vector Machine.

Introduction

Prediction available market is a potential and a helpful space of analysis for business call makers. The stock trading is an organic process, advanced and volatile method. Stock prediction is characterized by information intensity, noise, uncertainty and hidden relationships. Prediction of stock techniques obtainable is incredibly complicated and important analysis topic. It's difficult once the data available is noisy and not stationary. It's vital as a result of it yield important results for decision markers. Stock trading may be a location where corporations invest high capital and do their shares trading. The predicting cost is crucial issue for investors for creating cash. Researchers have tried that it's attainable to predict stock costs. It put together helps investors to from commercialism or buying choices to induce higher profits.[1]

There are various algorithms used in datascience for stock market value used in datascience for stock market value prediction as shown in Figure 1.

**Figure1. Machine Learning Algorithms****A. Linear Regression**

One of the simplest and most well-liked supervised Machine Learning algorithms is linear regression. It is an applied math approach that's used for prophetic analysis. Linear regression shows the linear relationship between dependent and independent variables as shown in figure 2. which implies however, the worth of the variable quantity is varied in keeping with the worth of the experimental variable. Linear regression could be an easy technique and quite straightforward to interpret, however downside is that regression algorithms model over fits to the date and month worth rather than taking under consideration the previous values from the purpose of prediction, the model

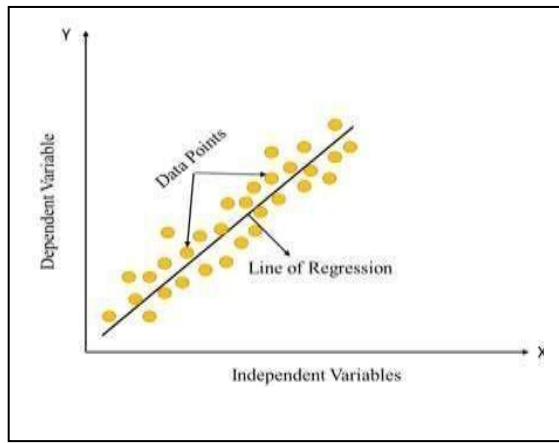


Figure 2. Linear Regression can contemplate the worth from a similar
Figure2. Linear Regression

date a month past, or a similar date/month a year or past, is the assumption of linear relationship between dependent and independent variables. [2]

B. K-Nearest Neighbors (K-NN)

KNN is that the simplest machine learning algorithm that is predicated on supervised learning techniques as shown in figure [3], [4]. Assumption for KNN is that the similarity between the new data/cases and offered cases and keep the new case into the class that is analogous to the accessible classes. The K-NN formula is used for each Regression and Classification however primarily it's used for the Classification issues. it's a non-parametric formula. it's a lazy learner formula because it doesn't acquire from the coaching set at once. for big coaching information it's simpler. to see the worth of K is also complicated your time. it's advantageous if we have a tendency to choose the options properly then it offers superb results. Second is that the K-Nearest neighbor Classifier works well on basic recognition. The most vital drawback is that the existence of immaterial parameters is incredibly sensitive to them [3]. In stock prediction analysis there is no definite variable to predict future cost of stock. People opinion or emotion about particular stock also affects the price of stock. To categorize tweet to calculate sentiment worth relating to specific stock, Naive Bayes and Random Forest algorithm area unit used. The results of sentiment analysis area unit want to predict

the corporate stock value. The linear regression technique used to build the prediction model.[4]

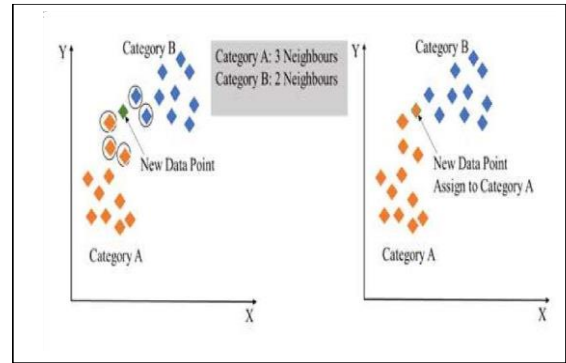


Figure 3. Before KNN Figure 4. After KNN

C. Naïve Bayes

It is a supervised learning algorithm that is predicated on mathematician theorem. This algorithm is employed for solving classification issues. it's in the main used for text classification that consists of high dimension training information sets. it's a {quick} machine learning algorithm which may offer quick predictions. It is a probabilistic classifier. it's used for binary furthermore as multiclass classification. It handles each continuous and distinct information. it's wont to create period of time predictions. It needs a tiny low quantity of training information. The main disadvantage of Naive mathematician is that the assumption of freelance predictor options. Naïve Bayes assumes that each one prognosticators area unit freelance. In world it's seldom happening.[3]

D. Decision Tree

Decision Tree algorithm is supervised learning algorithm. This algorithm accustomed solve each regression and classification issues. Chiefly it's accustomed solve classification issues. It is a tree structured classifier, during which internal nodes represent the options of a dataset, branches represent the choice rules and every leaf node represents the end result. There are a unit 2 nodes within the call tree, Decision node and also the leaf node as shown in figure 5. Decision nodes area unit used for creating a choice and it's multiple branches. Leaf nodes don't contain from now on

branches and area unit the output of these choices. the choices area unit taken on the premise of options of the given dataset. It's a graphical illustration for all potential solutions to a tangle based on given conditions. To create a tree Classification and Regression Tree (CART) algorithm is used. It is straightforward to grasp. information cleansing demand is a smaller amount as compared to different algorithms. The decision tree could contain many layers, which can build it advanced. [5],[6].

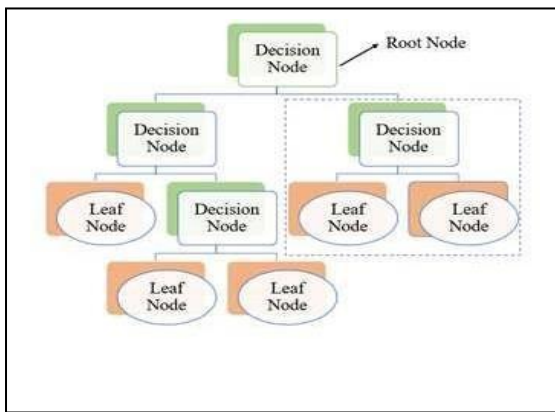


Figure 5. Decision Tree

E. Support Vector Machine (SVM)

Support Vector Machines area unit the foremost standard supervised Learning algorithms. it's used for Classification still as Regression complications. SVM algorithm is to form the simplest line or call boundary which will segregate n-dimensional area into categories so we will simply place the new datum within the correct class. Hyperplane is that the best decision boundary. It works well in generalization. It conjointly reduces process burden. SVM selects the acute points/vectors that facilitate in forming the hyper plane as shown in figure 6. These extreme points area unit referred to as support vectors, and thence the formula is termed as Support Vector Machine. it's simple to tackle the problem of call rules and error frequency. For nonlinearly separable training data, it is not easy to decide optimal parameters. It does not provide good transparency. It is difficult to understand. [2]

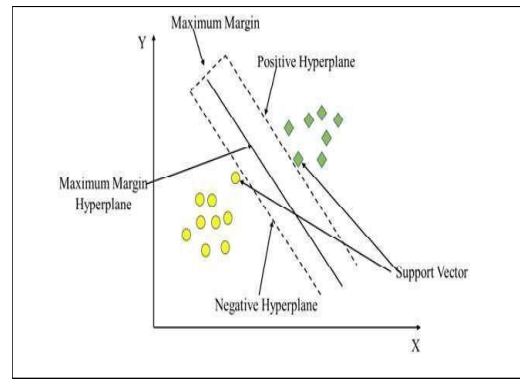


Figure 6. Support Vector Machine

Literature review

One of the most daunting areas of computer science is study of stock market movements and emotions. The author proposed a method in [7] for automatically predicting the stock price using the neural network in this paper. The author demonstrates that the forecast of stock prices from historical prices and sentiments is substantially linked to the real stock price of a specific stock price. In [8] article, the author suggested a new methodology that incorporates the qualitative method and the quantitative method. Data from social media, including text mining and sentiment analysis, was obtained in qualitative analysis. Historical data of individual stock was used in quantitative analysis to forecast market movement. For the latest news headlines, the author also measures sentiment value. The stock prediction value, which supports the opening price and closing price, was calculated by the author using the machine learning module. Fuzzy rules are set to forecast specific market movement on the basis of sentiment value and stock prediction value. This model has suggested the beneficial stock for investment successfully. There are two common methods in this strategy to forecast stock market prices. Technical theories are one of these, and fundamental or intrinsic value analysis is the second. The method proposed in [9] is based on the concept of technological theory. The forecast model can be useful for historical data to obtain potential patterns when and when new data varies in the valuation of the business stock market. Technical analysis and a semi-strong type of

successful study In the proposed work, the market hypothesis is followed to construct the prediction model. This approach uses historical data and social media data to construct a model that forecasts the movement of stock patterns. Two models are constructed, using both models administered by the algorithm of machine learning. The first model is a regular prediction model and the second model is predetermined weekly. The future pattern for the next day is projected by the Regular Forecast model. The monthly forecast model reflects historical data only and forecasts the pattern for the next month. It is very common among investors to forecast the stock market value. Investors want to know what the return on their investment. Stock values are historically forecast by technical analysts and brokers who use historical prices, trends and fundamental trends the stock price forecast for a day is now becoming more complicated as stock prices depend on the political climate, the country's economic situation and natural disasters, etc. The author uses the linear regression method in this approach to estimate the stock value. The technique of linear regression is used because it is very straightforward and is usually appropriate. If we try to estimate the value of a variable based on the value of another variable, linear regression is a statistical model. The Moore and Penrose technique are used by the author in [10] to estimate the regression equation coefficients. By using Java, the author

implements this method. The author collected stock details from the New York Stock Exchange. In [11] two algorithms were used by the author: Least-squares support-vector machines (LS—SVM) are the least-square variants of support vector (SVM) machines and particle swarm machines Optimization (PSO). LS-SVM is an algorithm supervised by machine learning that can be used for the problems of classification or regression.

Conclusion

Technical research identifies with the investigation of past stock costs to foresee the pattern of costs in future. It shows you the bearing of development of the offer costs. With the assistance of specialized exploration, you can recognize whether there will be sharp ascent or fall in the cost of offer. It is not reliant on ongoing information or occasions which have just been joined in the price of the stock. As the stock costs are reliant on financial backer sentiment which continues changing as indicated by news and occasions, technical research underlines the utilization of Stop-misfortunes. It will save financial investors from enduring a major misfortune in future Specialized exploration gives significant outcomes just for stocks which are high popular and exchanged enormous volumes. In this paper, we summarized various machine learning algorithms which are relevant to stock prediction.

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SAMPLING DISTRIBUTION OF SAMPLE MEAN AND SAMPLE MAXIMUM UNDER SIMPLE RANDOM SAMPLING AND STRATIFIED SAMPLING: A COMPARATIVE STUDY

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ABSTRACT

Traditional sampling designs provide an estimator of the population mean through the sample mean. The sample maximum receives very little attention. This paper gives the comparison of statistical properties of the sample mean and sample maximum under simple random sampling and stratified sampling. In particular, the sampling distribution of sample maximum is derived under simple random sampling and stratified sampling. The sampling distribution is then used to derive the expected value and sampling variance of sample maximum under these sampling designs.

Keywords: Sampling design, simple random sampling, sample mean, sample maximum, sampling distribution, sampling variance, stratified sampling.

Introduction

One of the most common statistical procedures for collecting data that will be evaluated for inferential purposes is sampling. The population mean or population total has been emphasized as the most important population characteristic in the majority of the literature on finite population samples. As a result, the majority of statistical literature focuses on estimating the population mean or population total. In real life, the interest may not always be confined to the population mean or population. There are various scenarios in which the interest is in the population maximum. For example, the maximum temperature indicates the intensity of summer, and the severity of pollution is determined by the maximum level of pollutants present. In such instances, it is obvious to use the sample maximum as an estimate of the population maximum. The sampling behavior of the sample mean and sample maximum is investigated in this work using various simple random sampling and stratified sampling. It is interesting to note that the sampling variability of the sample maximum as the sample size changes in comparison to the population size.

Estimation of Population Mean Under Simple Random Sampling

Simple random sampling (SRS) is a method used to draw a sample of n number of sampling units from a population which contains N sampling units, in such a way that every sampling unit of the population has an equal chance to include in the sample. There are two methods for drawing the samples.

Simple Random Sampling without Replacement (SRSWOR): In SRSWOR the units are randomly drawn one by one in such a way that, the unit selected will be again replaced, in the population before the next draw.

Simple Random Sampling with Replacement (SRSWR): In SRSWR the units are drawn one by one in such a way that the unit selected will not be replaced back in the population before the next draw.

Notations

Let the population contains the N sampling units U_1, U_2, \dots, U_N and sample contains the n sampling units u_1, u_2, \dots, u_n .

Y is the characteristic under consideration
 Y_i ($i = 1, 2, \dots, N$) is value of the characteristic for the i^{th} unit of the population and y_i ($i = 1, 2, \dots, n$) is value of

the characteristic for the i^{th} unit of the sample. Then we define

$$\text{Population mean} = \bar{Y}_N = \frac{1}{N} \sum_{i=1}^N Y_i$$

$$\text{Sample mean} = \bar{y}_n = \frac{1}{n} \sum_{i=1}^n y_i$$

S^2 = Mean square for the population

$$= \frac{1}{N-1} \sum_{i=1}^N (Y_i - \bar{Y}_N)^2$$

s^2 = Mean square for the sample

$$= \frac{1}{n-1} \sum_{i=1}^n (y_i - \bar{y}_n)^2$$

σ^2 = population variance

$$= \frac{1}{N} \sum_{i=1}^N (Y_i - \bar{Y}_N)^2$$

Probability of drawing a Sample and a Specified Unit

SRSWOR: If n sampling units are selected from population of size N by SRSWOR then the total possible samples are $\binom{N}{n}$.

Therefore the probability of selecting any one of these samples is $\frac{1}{\binom{N}{n}}$.

The probability of drawing any unit at the 1st draw is $1/N$, the probability of drawing any unit at 2nd draw from among the available $(N-1)$ units, is $1/(N-1)$, and so on.

Let A_k be the event that any specified unit is selected at the k^{th} draw then

$$P(A_k) = \frac{1}{N}; k = 1, 2, \dots, n$$

The probability of a specified unit including in the sample is

$$\sum_{k=1}^n \frac{1}{N} = \frac{n}{N}$$

SRSWR: If n sampling units are selected from population of size N by SRSWR then

the total possible samples are N^n . Therefore the probability of selecting any one of these samples is $\frac{1}{N^n}$.

In SRSWR population size is remains the same at every draw, therefore the probability of selecting any element at any draw is $1/N$. In simple random sampling with replacement and without replacement, the sample mean is an unbiased estimator of the population mean.

$$\text{i.e. } E(\bar{y}_n) = \bar{Y}_N$$

The variance of the sample mean under SRSWOR is

$$\begin{aligned} \text{Var}(\bar{y}_n) &= \left(\frac{1}{n} - \frac{1}{N} \right) S^2 \\ &= \frac{N-n}{nN} S^2 \end{aligned}$$

And the variance of the sample mean under SRSWR is

$$\text{Var}(\bar{y}_n) = \frac{N-1}{nN} S^2$$

Estimation of population mean Stratified Sampling

When the population is not homogeneous, simple random sampling is ineffective because some portions of the population may be overrepresented while others may be underrepresented. In these circumstances, the population is sub-divided into k strata in such a way that strata are internally homogeneous. This procedure of dividing the population into k strata is called as stratification. Stratification is done based on a characteristic that is closely related to the characteristics of the units being studied. After this process, a random sample is drawn from each stratum by using SRSWOR. All these units from different strata constitute a random sample from the population. Such a sample is called as a stratified random sample.

Between stratum, there is the maximal heterogeneity. This is why, when our aim is to estimate the population mean, sampling units are chosen from all strata, because each stratum contributes to the mean estimation.

Notations

Let k be the number of strata.

N: Total number of sampling units in the population, N_i : Number of sampling units of i^{th} stratum, n_i : The number of sampling units selected by using SRSWOR from i^{th} stratum, Y: characteristic under study, y_{ij} ($j = 1, 2, \dots, N_i, i = 1, 2, \dots, k$): value of j^{th} unit in the i^{th} stratum. $\bar{Y}_{Ni} = \frac{1}{N_i} \sum_{j=1}^{N_i} y_{ij}$: population

mean of i^{th} stratum, $\bar{y}_{ni} = \frac{1}{n_i} \sum_{j=1}^{n_i} y_{ij}$: sample

mean of i^{th} stratum, $w_i = \frac{N_i}{N}, n = \sum_{i=1}^k n_i$ and

$$N = \sum_{i=1}^k N_i$$

In stratified sampling population mean is weighted arithmetic mean of stratum means, weights being equal to size of strata and is given by $\bar{Y}_N = \frac{1}{N} \sum_{i=1}^k N_i \bar{Y}_{Ni}$. Sample mean is

$$\bar{y}_n = \frac{1}{n} \sum_{i=1}^k n_i \bar{y}_{ni} \text{ and } E(\bar{y}_{ni}) = \bar{Y}_{Ni}$$

Now,

$$\begin{aligned} E(\bar{y}_n) &= \frac{1}{n} \sum_{i=1}^k n_i E(\bar{y}_{ni}) \\ &= \frac{1}{n} \sum_{i=1}^k n_i \bar{Y}_{Ni} \\ &\neq \bar{Y}_N \end{aligned}$$

Here \bar{y}_n is biased estimator of \bar{Y}_N . Now to obtain unbiased estimator of \bar{Y}_N consider the

stratum mean which is the weighted mean of strata sample means, weights being equal to size of strata given by $\bar{y}_{st} = \frac{1}{N} \sum_{i=1}^k N_i \bar{y}_{ni}$.

Now,

$$\begin{aligned} E(\bar{y}_{st}) &= \frac{1}{N} \sum_{i=1}^k N_i E(\bar{y}_{ni}) \\ &= \frac{1}{N} \sum_{i=1}^k N_i \bar{Y}_{Ni} \\ &= \bar{Y}_N \end{aligned}$$

Thus \bar{y}_{st} is an unbiased estimator of \bar{Y}_N .

$$\text{Var}(\bar{y}_{st}) = \sum_{i=1}^k w_i^2 \frac{N_i - n_i}{n_i N_i} S_i^2$$

Estimation of Population Maximum under Simple Random Sampling

Simple Random Sampling (SRS) provides an unbiased estimate of the population mean. This is the consequence of the fact that simple random sampling imposes a discrete uniform distribution on the finite population that is being sampled. The sample maximum is the most natural choice when the purpose is to estimate the population maximum. Statistical properties of the sample maximum are investigated here.

Let the population contains N sampling units u_1, u_2, \dots, u_N . Let the variable of interest X, have values. x_1, x_2, \dots, x_N on these sampling units, respectively in that order. If the values x_1, x_2, \dots, x_N are organized in an ascending order of magnitude and written as $x_{(1)}, x_{(2)}, \dots, x_{(N)}$, then the corresponding sampling units in the population also get reorganized and are recorded as $u_{(1)}, u_{(2)}, \dots, u_{(N)}$. When a random sample of size n is selected by using SRSWOR from this population the sampling units in the sample are denoted by U_1, U_2, \dots, U_n and the corresponding values

of the variable of interest by X_1, X_2, \dots, X_n . When sample values are sorted and organized in an ascending order of magnitude, the resulting values are written as $X_{(1)}, X_{(2)}, \dots, X_{(n)}$ and the corresponding sampling units as $U_{(1)}, U_{(2)}, \dots, U_{(n)}$. Since the n sample values are different (because SRSWOR), the sample maximum cannot take any of the $n - 1$ smallest values in the population, namely $x_{(1)}, x_{(2)}, \dots, x_{(n-1)}$. It is then clear that the sample maximum $X_{(n)}$ can take any one of the $N - n + 1$ possible values $x_{(n)}, x_{(n+1)}, \dots, x_{(N)}$. If $X_{(n)} = x_{(r)}$, for some r such that $n \leq r \leq N$, then no sample value can exceed $x_{(r)}$. In other words, if $X_{(n)} = x_{(r)}$, then the other $n - 1$ sample values must be from among the $r - 1$ possible values $x_{(1)}, x_{(2)}, \dots, x_{(r-1)}$. The number of ways in which such selection can be made is given by $\binom{r-1}{n-1}$ since the number of ways of selecting a sample of size n by using SRSWOR from a population of size N is $\binom{N}{n}$.

The probability that the sample maximum is $x_{(r)}$ is given by

$$P[X_{(n)} = x_{(r)}] = \frac{\binom{r-1}{n-1}}{\binom{N}{n}} \text{ for } r = n, n+1, \dots, N.$$

In other words, it is assumed that $x_{(r)} = r$ for $r = 1, 2, \dots, N$. (1)

This simplification leads to the simplified expression

$$P[X_{(n)} = r] = \frac{\binom{r-1}{n-1}}{\binom{N}{n}} \text{ for } r = n, n+1, \dots, N.$$

Probability Distribution of the Sample Maximum

The largest sample value, that is the sample maximum, denoted by $X_{(n)}$, can take any one of the $N - n + 1$ possible values $n, n+1, n+2, \dots, N$. When $X_{(n)} = r$ for some $r = n, n+1, n+2, \dots, N$, then one of the n sample values is exactly equal to r and the remaining $n - 1$ sample values are chosen from the $r-1$ possible values $1, 2, \dots, r-1$. The number of ways in which this can happen is $\binom{r-1}{n-1}$.

This leads to the expression

$$P[X_{(n)} = x_{(r)}] = \frac{\binom{r-1}{n-1}}{\binom{N}{n}}, r = n, n+1, \dots, N. \quad (2)$$

Since it is assumed that $x_{(r)} = r$ for $r = 1, 2, \dots, N$.

It is also easy to write

$$P[X_{(n)} = r] = \frac{\binom{r-1}{n-1}}{\binom{N}{n}}, r = n, n+1, \dots, N. \quad (3)$$

Expected Value and Sampling Variance of the Sample Maximum

We use the probability distribution of the sample maximum given in Equation (3) to get the first two moments of the sample maximum. The expected value of sample maximum is given by

$$\begin{aligned}
 E[X_{(n)}] &= \sum_{r=n}^N r \cdot P[X_{(n)} = r] \\
 &= \sum_{r=n}^N r \cdot \frac{\binom{r-1}{n-1}}{\binom{N}{n}} \\
 &= \frac{1}{\binom{N}{n}} \sum_{r=n}^N r \cdot \binom{r-1}{n-1} \\
 &= \frac{1}{\binom{N}{n}} \sum_{r=n}^N r \cdot \frac{(r-1)!}{(n-1)!(r-n)!} \\
 &= \frac{1}{\binom{N}{n}} \sum_{r=n}^N \frac{r!}{(n-1)!(r-n)!} \\
 &= \frac{n}{\binom{N}{n}} \sum_{r=n}^N \frac{r!}{n!(r-n)!} \\
 &= \frac{n}{\binom{N}{n}} \sum_{r=n}^N \binom{r}{n} \\
 &= \frac{n}{\binom{N}{n}} \binom{N+1}{n+1} \\
 &= n \cdot \frac{n!(N-n)!}{N!} \cdot \frac{(N+1)!}{(n+1)!(N-n)!} \\
 &= \frac{N+1}{n+1} \cdot n. \tag{4}
 \end{aligned}$$

The sample maximum is clearly not an unbiased estimator of the population maximum, as shown by Equation (4). The bias in the sample maximum $X_{(n)}$ is given by

$$\begin{aligned}
 \text{bias}[X_{(n)}] &= N - E[X_{(n)}] \\
 &= \frac{N-n}{n+1} \tag{5}
 \end{aligned}$$

Now, the sampling variance of the sample maximum is obtained by obtaining the second raw moment of the sample maximum. For this, consider the factorial moment

$$\begin{aligned}
 E[X_{(n)}(X_{(n)} + 1)] &= \sum_{r=n}^N r(r+1)P[X_{(n)} = r] \\
 &= \sum_{r=n}^N r(r+1) \cdot \frac{\binom{r-1}{n-1}}{\binom{N}{n}} \\
 &= \frac{1}{\binom{N}{n}} \sum_{r=n}^N r(r+1) \cdot \binom{r-1}{n-1} \\
 &= \frac{1}{\binom{N}{n}} \sum_{r=n}^N \frac{(r+1)!}{(n-1)!(r-n)!} \\
 &= \frac{n(n+1)}{\binom{N}{n}} \sum_{r=n}^N \frac{(r+1)!}{(n+1)!(r-n)!} \\
 &= \frac{n(n+1)}{\binom{N}{n}} \binom{N+2}{n+2} \\
 &= n(n+1) \cdot \frac{n!(N-n)!}{N!} \cdot \frac{(N+2)!}{(n+2)!(N-n)!} \\
 &= n(n+1) \cdot \frac{(N+1)(N+2)}{(n+1)(n+2)} \\
 &= \frac{(N+1)(N+2)}{(n+2)} \cdot n \tag{6}
 \end{aligned}$$

The second raw moment of the sample maximum is then obtained by using the following relationship

$$E[X_{(n)}^2] = E[X_{(n)}(X_{(n)} + 1)] - E[X_{(n)}] \quad (7)$$

From Equation (4) and (6)

$$E[X_{(n)}^2] = \frac{(N+1)(N+2)}{n+2} \cdot n - \frac{N+1}{n+1} \cdot n$$

$$= \frac{(N+1)(nN+N+n)}{(n+1)(n+2)} \cdot n \quad (8)$$

Finally, we obtain the sampling variance of the sample maximum as

$$\text{Var}[X_{(n)}] = E[X_{(n)}^2] - \{E[X_{(n)}]\}^2$$

$$= \frac{(N+1)(nN+N+n)}{(n+1)(n+2)} \cdot n - \left(\frac{N+1}{n+1}\right)^2 \cdot n^2$$

$$= \frac{(N+1)(N-n)}{(n+1)^2(n+2)} \cdot n \quad (9)$$

Since $X_{(n)}$ is not unbiased for the population maximum its mean squared error is obtained as

$$\text{MSE}[X_{(n)}] = \text{Var}[X_{(n)}] + \{\text{bias}[X_{(n)}]\}^2$$

$$= \frac{(N+1)(N-n)}{(n+1)^2(n+2)} \cdot n + \frac{(N-n)^2}{(n+1)^2}$$

$$= \frac{(N-n)(2N-n)}{(n+1)(n+2)} \quad (10)$$

Estimation of Population Maximum under Stratified Random Sampling

When the goal of sampling is to estimate the population maximum, stratified random sampling may not be the best option because, in its most frequent form, it aims to acquire comprehensive data on a heterogeneous population without increasing the sample size unnecessarily. When the goal is to estimate the population maximum, however, only one stratum can give the

essential information. As a result, only one stratum should be sampled, with all other strata and sampling units in those strata being ignored.

Suppose size of population is N , k is the number of strata and N_1, N_2, \dots, N_k are stratum sizes. For $h = 1, 2, \dots, k$, the stratum boundaries are denoted by x_{h_l} (l for lower boundary) and x_{h_u} (u for upper boundary). Without loss of generality suppose further that strata are numbered in such a way that $x_{h_u} = x_{(h+1)_l}$ for $h = 1, 2, \dots, k-1$. It is then obvious that the first $k-1$ strata cannot contain the population maximum, and that the sample must therefore be drawn only from stratum number k . Let us denote its size by S , so that the largest value among the N_k sampling units in the stratum by selecting a sample using SRSWOR of size n_k from the stratum.

It may be easy to understand the situation if it is described as follows. The sampling units in the population are arranged in an ascending order, so that strata are non-overlapping. The k strata can be represented as follows.

If the problem is described as follows, it may be easier to comprehend. The population's sampling units are grouped in ascending order to prevent strata from overlapping. The k strata are represented in the following way.

$$\text{Stratum 1} = \{x_{(1)}, x_{(2)}, x_{(3)}, \dots, x_{(N_1)}\},$$

$$\text{Stratum 2} = \{x_{(N_1+1)}, x_{(N_1+2)}, \dots, x_{(N_1+N_2)}\},$$

⋮

$$\text{Stratum } k = \{x_{(N-N_k+1)}, x_{(N-N_k+2)}, \dots, x_{(N)}\}.$$

However, none of these values are unknown in practice. The above representation can be simplified even more using Equation (4.1), resulting in the following representation.

$$\text{Stratum 1} = \{1, 2, \dots, N_1\},$$

$$\text{Stratum 2} = \{N_1+1, N_1+2, \dots, N_1+N_2\},$$

⋮

$$\text{Stratum K} = \{N-N_k+1, N-N_k+2, \dots, N\}.$$

Probability Distribution of the Sample Maximum

The population values in the stratum are denoted by

$$N-N_k+1, N-N_k+2, \dots, N-N_k+N_k=N$$

Whereas the sample values are ordered in an ascending order and written as $X_{(1)}, X_{(2)}, \dots, X_{(n_k)}$ so that $N_{(n_k)}$ is the sample maximum. Using Equation (4.3), we can write

$$P[X_{(n_k)} = N - N_k + j] = \frac{\binom{j-1}{n_k-1}}{\binom{N_k}{n_k}}, j = n_k, n_k + 1, \dots, N_k$$

(11)

Alternatively, but equally as effectively,

$$P[X_{(n_k)} - N + N_k = j] = \frac{\binom{j-1}{n_k-1}}{\binom{N_k}{n_k}}, j = n_k, n_k + 1, \dots, N_k$$

(12)

Expected Value and Sampling Variance of the Sample Maximum

The expected value of the sample maximum is obtained as follows using the probability distribution of the sample maximum given in Equation (12) and the result in Equation (4).

$$E[X_{(n_k)} - N + N_k] = \frac{N_k + 1}{n_k + 1} \cdot n_k$$

(13)

so that

$$E[X_{(n_k)}] = N - N_k + \frac{N_k + 1}{n_k + 1} \cdot n_k$$

(14)

The last expression simplifies to

$$E[X_{(n_k)}] = N - \frac{N_k - n_k}{n_k + 1}$$

(15)

The sample maximum is not unbiased for the population maximum, as Equation (15) shows. As a matter of fact, Equation (15) shows that the bias of sample maximum is given by

$$\text{bias}[X_{(n_k)}] = \frac{N_k - n_k}{n_k + 1}$$

(16)

Using Equation (9), the sampling variance of the sample maximum is given by

$$\text{Var}[X_{(n_k)}] = \frac{(N_k + 1)(N_k - n_k)}{(n_k + 1)^2 (n_k + 2)} \cdot n_k$$

(17)

The mean squared error of the sample maximum is calculated using Equations (16) and (17) as follows

$$\text{MSE}[X_{(n_k)}] = \frac{(N_k - n_k)(2N_k - n_k)}{(n_k + 1)(n_k + 2)}$$

Conclusion

Sample mean is an unbiased estimator of population mean under simple random sampling and the stratum mean which is the weighted mean of strata sample means, weights being equal to size of strata is an

unbiased estimator of population mean under stratified sampling whereas the sample maximum is not an unbiased estimator of population maximum under simple random sampling and stratified sampling. When the goal of sampling is to estimate the population maximum, stratified random sampling may not be the best option because, in its most frequent form, it aims to acquire comprehensive data on a heterogeneous population without increasing the sample size unnecessarily. When the

goal is to estimate the population maximum, however, only one stratum can give the essential information. As a result, only one stratum should be sampled, with all other strata and sampling units in those strata being ignored. But when the goal is to estimate the population mean, all strata gives the essential information. As a result, all strata should be sampled to estimate population mean.

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ACADEMIC RESILIENCE OF PROSPECTIVE TEACHERS IN CHENNAI

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ABSTRACT

Academic Resilience is the ability of Prospective teachers to overcome their academic pressure. This study was aimed at finding out differences in academic resilience of Prospective teachers with respect to gender, age, medium of study, discipline, year of study, domicile and type of management. Survey method was adopted for this study. Purposive sampling was taken for this study. This study was administered upon 155 student teachers. Academic resilience scale (Cassidy, 2016) was used. Findings revealed academic resilience differed significantly with age, medium of study, discipline, year of study and type of management of the institution.

Keywords: Academic Resilience, Prospective teachers, Counseling therapy, Achievement motivation, Teaching–Learning Practices.

1. Introduction

Over the past decades, Prospective teachers are experienced by stress and anxiety. In the aspect of practicum, Prospective teachers faces difficult situation. It showed how student teachers encountered with academic problems and difficulties. Resilience can be knowledge of as skill to face challenges to success or progress (Masten & Coatsworth, 1995; Driscoll, A. K. 2006).

Academic resilience defined as “a capacity to overcome acute and/or chronic adversity that is seen as a major threat to a student’s educational development” (Martin, 2013, p. 488).

In the aspect of scholastic perspective, Academic Resilience is the student teacher’s capacity to deal efficiently with scholastic complications, stress and strain to learn.

2. Review Of Related Literature

Yavuz, H. C., & Kutlu, O. (2016). investigated factors affecting the academic resilience of economically disadvantaged high school students. 304 senior students were selected. Results revealed that cognitive flexibility and perceived social support predicted the level of academic resilience of economically disadvantaged high school students.

Rao, P. S., & Krishnamurthy, A. R. (2018). analyzed impact of academic resilience on the scholastic performance of high school students. High schools students studying in Public school and came from low socio-economic background were selected. The study revealed that girls and boys were not differed significantly with their scholastic abilities as well as their resilience attributes.

Buslig, S. M. C. A. (2019). investigated the academic resilience of college students in Kalinga. The sample of the study was 100 college students who generally came from indigent families. Stratified random sampling was taken by investigator. Relationship between academic resilience and academic performance was not differed significantly.

Karabiyik, C. (2020). conducted a study on interaction between Academic Resilience and Academic Achievement of Teacher Trainees. 198 pre-service English language teachers were selected. Participants’ reflecting and adaptive help-seeking was highly scored. It was followed by perseverance, negative affect and emotional response dimensions.

3. Methodology

STATEMENT OF THE PROBLEM:

The study was entitled as “Academic resilience of Prospective teachers in Chennai”.

DEPENDENT VARIABLE: Academic Resilience

INDEPENDENT VARIABLE: Gender, Age, medium of study, discipline, Year of study, Domicile and Type of management of the institution.

OBJECTIVES

1. To find gender – wise significant difference in academic resilience of Prospective teachers.
2. To find academic resilience of Prospective teachers is significantly differing with respect to age.
3. To find academic resilience of Prospective teachers is significantly differing with respect to medium of study.

4. To find stream - wise significant difference in of academic resilience of Prospective teachers.

5. To find academic resilience of Prospective teachers is significantly differing with respect to Year of study.

Hypotheses

1. Gender – wise no significant difference in academic resilience of Prospective teachers.

2. Academic resilience of Prospective teachers is not significantly differed with respect to age.

3. Academic resilience of Prospective teachers is not significantly differed with respect to medium of study.

4. Stream – wise no significant difference in academic resilience of Prospective teachers.

5. Academic resilience of Prospective teachers is not significantly differed with respect to year of study.

6. Academic resilience of Prospective teachers is not significantly differed with respect to domicile.

7. Academic resilience of Prospective teachers is not significantly differed with respect to type of management of the institution.

6. To find academic resilience of Prospective teachers is significantly differing with respect to domicile.

7. To find academic resilience of Prospective teachers is significantly differing with respect to type of management of the institution.

Method Of The Research:

“Descriptive survey” method of research was used.

SAMPLE: The researcher was collected the data from 155 Prospective teachers using the purposive sampling technique for this study.

INSTRUMENT: Academic Resilience Scale (Cassidy, S. 2016) was employed. It consists of 30 items. The reliability was 0.90 and its criterion validity was 0.49.

DATA COLLECTION PROCEDURE:

Researcher created a Google Form link to collect data from sample.

4. Data Analysis

Researcher used SPSS to calculate Mean, S.D and t-value for analyzing the collected data.

Hypothesis 1: Gender – wise no significant difference in academic resilience of Prospective teachers.

Table I: Academic resilience of male and female Prospective teachers.

Gender Composition	No. of Prospective teachers	Academic Resilience- Avg. in % & Std. Dev.	Cal. 't'	p
MALE	127	38.46 & 9.751	1.346	0.180
FEMALE	28	41.79 & 18.759		

Since probability value $0.180 > 0.05$, and it is an evidence to accept the framed hypothesis1.Hence, Gender – wise academic resilience of Prospective teachers were not significantly differed.

Hypothesis 2: Academic resilience of Prospective teachers is not significantly differed with respect to age.

Table II: Academic resilience of Prospective teachers and age.

AGE	No. of Prospective teachers	Academic Resilience- Avg. in % & Std. Dev.	Cal. 't'	p
BELOW 25	87	37.34 & 12.940	2.056	0.041
ABOVE 25	68	41.25 & 10.039		

Since probability value $0.041 < 0.05$, and it is an evidence to reject the framed hypothesis². Hence, academic resilience of Prospective teachers is statistically differed with respect to age.

Hypothesis 3: Academic resilience of Prospective teachers is not significantly differed with respect to medium of study.

Table III: Academic resilience of Prospective teachers and language of study.

MEDIUM OF STUDY	No. of Prospective teachers	Academic Resilience- Avg. in % & Std. Dev.	Cal. 't'	p
TAMIL	69	36.30 & 10.837	2.639	0.009
ENGLISH	86	41.27 & 12.274		

Since probability value $0.009 < 0.05$, and it is evidence to reject the framed hypothesis³. Hence, academic resilience of Prospective teachers is differed statistically with respect to medium of study.

Hypothesis 4: Stream - wise academic resilience of Prospective teachers is not significantly differed.

Table IV: Academic resilience of Prospective teachers and different stream.

STREAM	No. of Prospective teachers	Academic Resilience- Avg. in % & Std. Dev.	Cal. 't'	p
ARTS	81	41.00 & 12.763	2.159	0.032
SCIENCE	74	36.93 & 10.510		

Since probability value $0.032 < 0.05$, and it is evidence to reject the framed hypothesis4. Hence, stream - wise academic resilience of Prospective teachers is significantly differed.

Hypothesis 5: Academic resilience of Prospective teachers is not significantly differed with respect to year of study.

Table V: Academic resilience of Prospective teachers and year of study.

YEAR OF STUDY	No. of Prospective teachers	Academic Resilience- Avg. in % & Std. Dev.	Cal. 't'	p
FIRST YEAR	88	41.36 & 12.148	2.822	0.005
SECOND YEAR	67	36.04 & 10.887		

Since probability value $0.005 = 0.05$, and it is evidence to reject the framed hypothesis5. Hence, Academic resilience of Prospective teachers is significantly differed with respect to year of study.

Hypothesis 6: Academic resilience of Prospective teachers is not significantly differed with respect to domicile.

Table VI: Academic resilience of Prospective teachers and domicile.

DOMICILE	No. of Prospective teachers	Academic Resilience- Avg. in % & Std. Dev.	Cal. 't'	p
RURAL	74	35.90 & 11.414	3.260	0.001
URBAN	81	41.94 & 11.627		

Since probability value $0.001 < 0.05$, and it is evidence to reject the framed hypothesis6. Hence, Academic resilience of Prospective teachers is significantly differed with respect to domicile.

Hypothesis 7: Academic resilience of Prospective teachers is not significantly differed with respect to type of management of the institution.

Table VII: Academic resilience of Prospective teachers and type of management of the institution.

Type of management of the institution	No. of Prospective teachers	Academic Resilience- Avg. in % & Std. Dev.	Cal. 't'	p
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GOVERNMENT AIDED	86	41.36 & 12.148		
			2.822	0.020
PRIVATE	69	36.04 & 10.887		

Since probability value $0.020 < 0.05$, and it is evidence to reject the framed hypothesis. Hence, Academic resilience of Prospective teachers is significantly differed with respect to type of management of the institution.

5. Major Findings And Discussion

1. Gender – wise academic resilience of Prospective teachers were not significantly differed.
2. Academic resilience of Prospective teachers is statistically differed with respect to age. Above 25 aged Prospective teachers have higher academic resilience than that of below 25 aged Prospective teachers. This result is clashing with the studies (Munro & Pooley, 2009; McLafferty et al., 2012; Cassidy, 2015). The reason may be below 25 aged B.Ed. have higher rates of psychological distress.
3. Academic resilience of Prospective teachers is significantly differed with respect to language of study. English medium Prospective teachers have higher academic resilience than that of Tamil medium Prospective teachers.
4. Stream - wise academic resilience of Prospective teachers is significantly differed (Sharma, R. 2017). Arts stream Prospective teachers have higher academic resilience than that of Science stream Prospective teachers. The reason may be science teachers' have greater achievement motivation.
5. Academic resilience of Prospective teachers is not significantly differed with respect to Year

of study. First year Prospective teachers have higher academic resilience than that of second year Prospective teachers. The reason may be second year student teachers faces difficulties during their practicum.

6. Academic resilience of Prospective teachers is not significantly differed with respect to domicile. Urban Prospective teachers have higher resilience than that of rural Prospective teachers. The reason may be colleges of urban domicile have better learning environment.

7. Academic resilience of Prospective teachers is not significantly differed with respect to type of management of the institution Government aided college Prospective teachers have higher academic resilience than that of private college Prospective teachers. The reason may be the unaided colleges are conducting extra coaching classes, and counseling therapy classes.

Conclusion

This study provides the information regarding academic resilience of Prospective teachers. This study will help the administrators, policy makers and teacher educators for fostering academic resilience to Prospective teachers. Family, peer groups, community, and college support were considered most relevant variables to foster academic resilience for Prospective teachers. Healthy college and healthy interaction with family and peers is required to make the Prospective teachers academically resilient.

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