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Impact of Flexible Work Arrangements and Digital Tools on Employee Well-being: A Gender and Age Analysis in the Life Insurance Sector

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ABSTRACT

High-stress non-Western environments have made the insurance industry faster to embrace flexible work arrangements (FWAs) after the pandemic has caused major shifts in the traditional work paradigm, although there is limited research on how they affect employee well-being. While existing research highlights the remote work benefits, gaps persist now understanding how FWAs—particularly WFH, digital tools, plus tractable schedule—collectively influence the welfare through "work-life balance (WLB)" in India's insurance sector. This study examines (1) the direct effects of WFH, digital communication tools, and work flexibility on well-being of the employee, and (2) the role of WLB mediation in these relationships, while accounting for gender and age differences. A quantitative study was conducted with 201 life insurance professionals in Hyderabad, selected via "stratified random sampling". Several regression and mediation analyses were made to test hypotheses. WFH and work flexibility also had a significant positive effect on WLB, which fully mediated the positive effects they have on well-being (indirect effects: 0.61 and 0.55, 95% CIs [0.38, 0.84] and [0.30, 0.80], respectively). Indirect with narrow mediation (indirect effect: 0.24, 95 percent CI [0.14, 0.35]) was found with direct advantages of well-being ($b = 0.37$, p less than 0.001). Interestingly, the increased WLB was lower in women but not in overall satisfaction ($b = -0.33$, $p < .001$) demonstrating that gender differences have not yet been settled. The research establishes WLB as a key mediator of the outcomes of well-being of FWAs in the insurance industry.

KEYWORDS: Work-Life Balance, Employee Well-Being, Flexible Work Arrangements, Insurance Sector, Mediation Analysis, Gender Disparities

1. INTRODUCTION

Environment is also evolving rapidly and the environment we work is changing drastically in terms of workplace and the technical world. The traditional work-life balance that encompasses the traditional work and personal life is becoming blurred which calls organizations to think of new work-life integration policies. These strategies are not only expected to enhance the productivity but also ensure the holistic well-being of the employees (Zapata et al., 2023; Qadri, 2023). This is an in-depth exploration of the next generation solutions to the work-life integration where there is a key focus on the central role of technology in developing a balanced and satisfying work-life.

1.1 The Development of the Work-Life Balance (WLB)

Traditionally, WLB is defined with distinct separation among the personal and professional time. Nevertheless, the development of digital technologies and globalization of business lead to the initiation of the further evolution of WLB. Employees have now been estimated to be more accommodating and approachable and thus more integrated approach is necessary. Work integration and the life of an employee recognize the fact that work and personal activity are not mutually exclusive, and attempts to form synergies between them (Fabrellas, 2022).

1.2 The Technological share in the Work-Life Integration.

Technology is crucial to the work-life integration, and it offers some means of supporting the welfare of the employees. Among the developments making work-life integration more feasible are remote work and telecommuting, flexible work schedules, health and wellness technologies, digital collaboration tools, AI and automation. “Video conferences, cloud-based collaboration platforms, project management tools”—among other secluded work tools—help to keep connectivity and output outside the conventional office environment (Zapata et al., 2023). Flexible working hours such as flexitime, compressed workweek, and job sharing allow employees to balance their personal life and thereby enhance job satisfaction and reduce burnout (Qadri, 2023; Avadhani et al., 2022). Employees can become the primary drivers of their health using other health and wellness technologies including wearable hardware and wellness apps and, therefore, it is essential to motivate employees to exercise and track their health statistics (Rick et al., 2022; Thynne et al., 2022). Easy communication and assurance of project progress is supported with the help of such digital tools as Slack, Microsoft Teams, and Asana. The use of automation and AI is changing processes by liberating the staff members to do more significant work (Xu et al., 2023; Turja et al., 2023). Adopting next-generation work-life integration strategies benefits companies and employees in many ways, including improved employee engagement and productivity, enhanced well-being and reduced stress, talent attraction and retention, and a varied and inclusive work environment. Problems including digital overload and burnout, privacy and security issues, and equity in access to technological resources must be addressed (Fabrellas, 2022; Lirio et al., 2023).

1.3 Future Trends and Best Practices for Implementing Technology-Driven Integration of Work-Life

Emerging movements in the integration of work-life are shaping the future, offering new opportunities and challenges for organizations. Both augmented and virtual realities (AR & VR) are transforming remote work by creating immersive virtual environments, fostering stronger team cohesion. Artificial Intelligence (AI) and machine learning are personalizing work experiences, offering insights into employee well-being and suggesting proactive measures (Kuru, 2023; Xu et al., 2023). The smart gadgets like watches and fitness trackers provide real-time health records for wellness programs, helping employees make healthier lifestyle choices (Rick et al., 2022; Kaaria et al., 2023). “Block chain technology” enhances security and transparency in work processes, creating tamper-proof records of work hours, project milestones, and performance metrics. The gig economy and freelancing platforms like Upwork and Fiverr offer workers greater flexibility in choosing projects and schedules, catering to individual preferences and life circumstances. These platforms can help organizations access a diverse talent pool and manage workforce fluctuations.

Organizations should adopt an employee-centric approach involving staff members in the design and execution of projects if they are to successfully implement technology-driven work-life integration strategies. Clearly define policies and rules on data privacy, communication expectations, work hours, and technology use, so defining limits. Provide resources and seminars on managing digital tools, setting limits, and preserving well-being; train and support staff members in adjusting to new technologies (Lirio et al., 2023; Turja et al., 2023). Using measures like employee satisfaction, production, and health indicators, routinely assess the success of work-life integration policies. Promote wellness by means of leaders modeling balanced behavior and supporting projects emphasizing employee health, so strengthening the need of combining personal life with work.

1.4 Impetus of the Research

The insurance sector's rapid adoption of flexible work arrangements (FWA) and digital tools has transformed work dynamics, yet their impact on employee well-being remains unclear (Zapata et al., 2023; Avadhani et al., 2022). While these strategies can enhance work-life balance (Jung, 2022), they also risk digital overload (Turja et al., 2023) and inequitable access (Ginès i Fabrellas, 2022). This study examines how FWA and digital tools interact with job satisfaction and career development to shape well-being, addressing critical gaps in personalized policy design for the insurance sector.

1.5 Research Objectives

1. To examine the combined impact of work-from-home (WFH), digital tools, and work flexibility on employees' work-life balance (WLB), while controlling for gender and age.
2. To assess the impact of job satisfaction, career development, and compensation on employees' work-life balance (WLB).
3. To investigate whether work-life balance (WLB) mediates the relationship between WFH, digital tools, work flexibility and Employee well-being

1. 6 Research Scope

It examines three primary flexible work arrangements, including WFH, digital communication tools, and work flexibility, influence on employee well-being among life insurance professionals based in Hyderabad, India through the prism of WLB. The paper is based on Stranded in Demands of the Job Resources Theory and Boundary Theory, with a particular consideration on how these arrangements are job resources to improve WLB and, subsequently, well-being, and adjusting by gender and age differences. To determine the presence of these relationships, the study employs stratified random sample and quantitative design of the study by conducting regression and mediation analysis, but omits non-insurance sectors and other potential mediators to maintain the accuracy of the analysis. Although contributing to theoretical discussions on the management of boundaries in hybrid working settings, the findings will aim to provide specific insights to insurance firms in Hyderabad that aim to get the most out of flexible working policies.

1.7 Significance of the Study

This research is of great benefit to both the industry practice and to the scholarly debate. Practically, it provides insurance sector leaders in Hyderabad with evidence-based policy options to maximize WFH policies, the use of digital tools, and flexible scheduling, which are three primary sources of employee well-being and retention, theoretically it provides insights into how flexible work schedules work through work-life balance in a post-pandemic setting, thereby addressing the gaps in non-Western literature on hybrid work. Although its mediation analysis provides HR professionals with a road map to maximize ROI on the investments in workplace flexibility, the emphasis on the specific effects of gender, also informs the inclusionary policy design.

2. REVIEW OF LITERATURE

Within the context of Industry 5.0, the reviewed sources, in general, attenting on the shifting technological influences on the professionals' welfare. Kuru (2023) highlights the role of fast technological integration affecting employee wellness greatly, in part, by emotional intelligence, organizational justice, and workplace conditions. In the presence of the informal learning as an intermediary, Xu et al. (2023) also discover that the perception that employees have toward the prospect of AI is positively linked to workplace well-being. However, the threat of unemployment neutralizes this relationship to the negative, and they should focus on the necessity of psychological security in digital shifts. Through the concepts of the digi-uplifters and the digi-downshifters, Turja et al. (2023) continue to explore the multifaceted effect of technology by showing that, with regards to its effect on workload and worker autonomy, digitalization has the potential to make a job more fulfilling or less fulfilling.

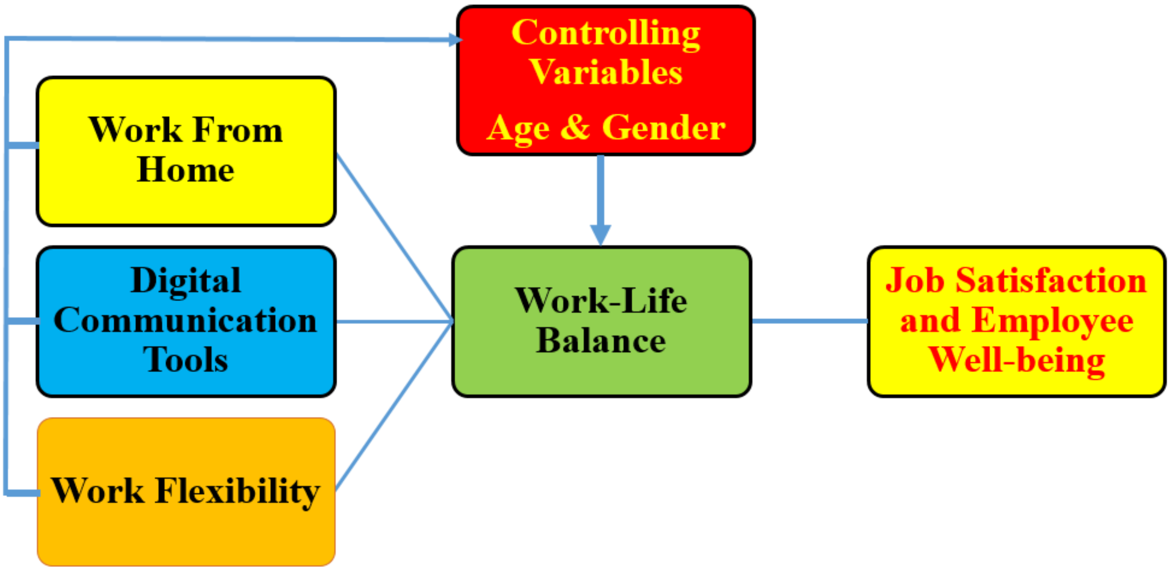
The other significant theme that is emerging out of the literature is that smart and affective computing technologies can be used to facilitate mental health at work. As Lessen Kaaria et al. (2023) point out, online-based interventions, like "cognitive behavioural therapy (CBT), are beneficial in the treatment of employees with anxiety, depression, and PTSD". In addition, Lirio et al. (2023) argue in favour of the moral use of Emotion AI to establish emotionally supportive workplaces. At the same time, Thynne et al. (2022) demonstrate the beneficial effect of real-time smart technology monitoring on paramedics such as e-diaries to control stress and, therefore, prevent burnout. Rick et al. (2022) also extend this to the role that mHealth apps play as an intermediary between psychological work factors and employee well-being to justify proactive health interventions. The third theme is that the primary source of well-being is flexibility and customized working schedules. Qadri, 2023 demonstrates that there is increasing leisure and health satisfaction with changes to teleworking and flexitime, especially among parents, hence this should be supported.

Offering a reliable balanced scale of work and life adapted to address the insurance sector needs, Avadhani et al. (2022) contribute to making people understand the influence of personal and organizational variables jointly on the results of wellness. Fabrellas (2022) is dedicated to the psychological threat of the digital age and stresses that, despite the flexibility brought about by technologies, they cause stressors, including job intensification and being constantly connected. All these studies put together give the picture of the complex transactions between technology, organizational plans, and psychological resources in making the employees to be well in the digital era.

2.1 Conceptual Framework

The conceptual map involves the integration of Job Demands-Resources (JD-R) Theory (Bakker et al., 2017) and Boundary Theory (Ashforth et al., 2000) in those three critical independent variables, i.e., WFH arrangements, digital communication tools, and work flexibility, affect the well-being of employees through the WLB mediation that is moderated by gender and age. The model presupposes that job resources (JD-R Theory) which allow employees to acquire enough control over the work-life boundaries (Boundary Theory) and enhance the WLB include WFH, digital tools, and flexible schedules. Better WLB, in its turn, will increase overall well-being. The model also separates direct effects (e.g., flexibility - well-being) and indirect effects (e.g., flexibility - WLB - well-being), which are covariate by gender and age in order to control demographic factor. This is a systematic method that does not only base the study on the well-known organizational theories, but it also offers a straightforward, verifiable route to the study of how contemporary working set-ups can act via virtual mechanisms of the psychological and behavioural processes to influence the results of the employees. IVs (WFH, Digital Tools, and Work Flexibility) are job resources, which decrease the work-life conflict. WLB balances their effectiveness to well-being through assisting employees to regulate limits. Control variables are Gender and Age that consider the demographic variations.

Conceptual Framework: Impact of Flexible Work Arrangements and Digital Tools on Employee Well-being Mediated by Work-Life Balance



3. METHODOLOGY

The paper implements the "quantitative research design" to study the effect of "flexible work schedules and combination of digital tools on the wellbeing of the employees" mediated by the life insurance professionals who live in the city of Hyderabad, a major financial hub. The study identifies the fluid working environment where hybrid models of working are being adopted. The target population will be the employees of the life insurance companies in all the available positions such as sales, underwriting, and administration. In the current research, a stratified random sampling method is used. Information gathered based on a structured questionnaire and validated Likert-scale items of indicators of major constructs: "work-from-home (WFH) practices, digital communication tools, work flexibility, job satisfaction, career development, compensation, work-life balance, and employee well-being".

4. DATA ANALYSIS & FINDINGS

Data analysis was a three-step systematic process, according to which the relationship of the digital tools, the flexible working schedules, and the well-being of the employees were studied in relation to each other. The descriptive statistics first gave the general view of the respondent population and the major variances. Reliability study was then done to ensure internal consistency of the instruments of measurement. Lastly, the state-of-the-art statistical analysis was used to test the hypotheses so as to compare the expected correlations with age and gendered corrections. The sequential approach allowed a strict validity of the theoretical background of the research by maintaining statistical resilience.

4.1 Stage-1: Descriptive Statistics

In order to calculate the central tendencies (mean, standard deviation) of relevant variables: work-from-home (WFH) practices, digital communication tools, work flexibility, job satisfaction, career development, compensation, work-life balance (WLB) and employee well-being the descriptive statistics is used. The step was necessary to make sure there would be no outliers or anomalies that would corrupt the subsequent studies and a straightforward perception of the data spread.

Table 1: Descriptive Statistics

Demographic & Statements	Statement Code	Mean	S.D.
Age	Age	1.74	1.079
Gender	Gender	1.37	0.485
I am allowed to stable my personal and professional life through WFH	WFH_1	4.24	1.097
I am more productive when working from home	WFH_2	3.89	1.057
Working from home makes it easier to manage my stress levels	WFH_3	4.17	1.022
WFH makes me to stick to longer working hours even after standard work-time	WFH_4	3.78	1.275
The E-resources aligned with my work allow me to stay online with my team	DCT_1	4.19	1.099
The digital communication tools using for work increases my workload	DCT_2	3.86	1.044
Work stress arouses of continuous peeping at my work notifications even after the working time.	DCT_3	4.08	1.113
Digital communication tools allow me to work more flexibly	DCT_4	4.11	1.057
The continuous work alerts distracts my concentration in the work	DCT_5	3.78	1.285
The personal and professional work will be balanced with flexible working hours	WF_1	4.31	1.013
I am more productive when I have a flexible work schedule	WF_2	4.09	1.037
A flexible work schedule makes it easier to manage my stress levels	WF_3	4.16	0.977
A flexible work schedule can sometimes lead to me working longer hours	WF_4	4.03	1.137
I feel less connected to my colleagues when I have a flexible work schedule	WF_5	3.65	1.308
I am satisfied with my current job	JSE_1	4.2	1.005
I feel like my job is challenging and stimulating	JSE_2	3.97	1.031
I feel valued and appreciated in my job	JSE_3	4.15	0.985
My job creates a lot of stress for me	JSE_4	4.02	1.227
I am not certain whether my job is a good fit for my skills and interests	JSE_5	3.65	1.296
My employer provides me with opportunities to develop my skills and career	CDO_1	4.18	1.02
I feel like I have opportunities for advancement in my current company	CDO_2	3.98	0.972
I am assured that I can progress the talents that are required to get success in my life	CDO_3	4.23	0.922
The lack of career development opportunities is a major source of stress for me	CDO_4	4.06	1.068
I am not sure what my career goals are	CDO_5	3.32	1.425
I am satisfied with my current level of compensation	C_1	4.16	1.053
I feel that my compensation is fair for the work I do	C_2	3.92	1.026
My compensation package meets my financial needs	C_3	4.16	1.037
Financial stress is a major source of stress for me	C_4	4.21	1.071
I am worried about my job security	C_5	3.82	1.304

The descriptive statistics reveal certain significant new viewpoints on the life insurance agents of Hyderabad. Despite the anxiety over isolation (WFH4: M=2.01) and overwork (WFH5: M=3.78; DCT3: M=4.08), the respondents were overall positive that work flexibility regarding the schedule enhances WLB (WFH1: M=4.24; WF1: M=4.16). Even though digital tools were perceived to provide flexibility (DCT4: M=4.11) they also induced alert fatigue (DCT5: M=3.78). Even though the job satisfaction rates were very good (JSE1: M=4.20), work (JSE4: M=4.02) and financial (C4: M=4.21) stress levels were also significant. Even though the uncertainty about career goals (CDO5: M=3.32) and job security (C5: M=3.82) occurred as secondary factors, the opportunities of career development were appreciated (CDO_1: M=4.18). The standard deviations are quite small (most of the S.D. less than 1.3) indicating consistency in the responses across the sample.

4.2 Stage-2: Test for Internal Consistency

The alpha (a) of Cronbach enabled one to assess the "internal consistency of multi-item constructions". This is ensure that the construct of questionnaire items, intended to be matched, was done on a regular basis hence ensuring that it would be strong when it comes to testing the hypothesis

Table 2. Reliability Analysis

S. No.	Scale Unit	Cronbach's Alpha	Interpretation
1	Work From Home	0.757	Acceptable
2	Digital Communication Tools	0.805	Good
3	Work Flexibility	0.795	Acceptable
4	Job Satisfaction and Employee Well-being	0.763	Acceptable
5	Career Development Opportunities	0.765	Acceptable
6	Compensation	0.823	Good

The alpha values are exceeding the threshold value 0.7 for acceptable reliability. The Work From Home (α = 0.757), Work Flexibility (α = 0.795), "Job Satisfaction and Employee Well-being (α = 0.763)", plus "Career Development Opportunities (α = 0.765)" scales showed acceptable reliability, indicating that their respective items consistently measured the intended constructs. Meanwhile, the Digital Communication Tools (α = 0.805) and Compensation (α = 0.823) scales exhibited good reliability, reflecting even stronger internal consistency. These results confirm that the questionnaire items were statistically robust and suitable for further hypothesis testing, ensuring that the data collected accurately represented the underlying theoretical constructs in the study.

4.3 Stage-3: Hypotheses Testing

Using sophisticated statistical methods, the phase of hypothesis testing looked at the expected links among convenient schedules of work and performance of employee. Theoretically, the study's framework was validated by three null hypotheses: First, while controlling for demographic factors, multiple regression analysis evaluated whether work-from--home arrangements, digital communication tools, and work flexibility notably predicted work-life balance (H_{01}). Second, another regression model assessed the job satisfaction effect, career development, and compensation on WLB (H_{02}). In the end, using the mediation analysis, based on the Macro (Model 4) of Hayes, it was discovered whether the work-life balance (H_{03}) was a noteworthy arbitrator between the IV and DV (WLB). Confidence Interval of 95 and extra precautions on multicollinearity (VIF<5) and resultant effect sizes guaranteed the overall way that all the analyses were done in a thorough way that allowed exploring the direct relationship and mediated relationships which were fundamental in the objectives of the study.

Research Hypotheses:

The inferential statistics helped to test three null hypotheses(H0) in accordance with the aim of the research:

1. **H_{01}**: Work-from-home, computer-based tools, and work flexibility are not significantly related to work-life balance (measured as gender and age).
2. **H_{02}**: Job satisfaction, career development, and compensation do not significantly predict work-life balance.
3. **H_{03}**: "Work-life balance does not mediate the relationship between flexible work arrangements (work-from-home, digital communication tools, and work flexibility) and employee well-being."

4.3.1 H_{01}: Work-from-home, digital tools, and work flexibility do not significantly predict work-life balance (controlling for gender and age).

Table – 3. Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Work Flexibility, Age, Gender, Work From Home, Digital Communication Tools[b]		Enter

a. Dependent Variable: Work Life Balance

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.907[a]	0.823	0.819	0.356

a Predictors: (Constant), Work Flexibility, Age, Gender, Work From Home, Digital Communication Tools

b Dependent Variable: Work Life Balance

Table 4. ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	115.16	5	23.032	181.549	0.000b
	Residual	24.738	195	0.127		
	Total	139.898	200			

a Dependent Variable: Work Life Balance

b Predictors: (Constant), Work Flexibility, Age, Gender, Work From Home, Digital Communication Tools

Table 5. Coefficients[a]

Model				Standardized Coefficients	t	Sig.
				Beta		
1	(Constant)	-0.806	0.200		-4.024	0.000
	Gender	0.088	0.055	0.051	1.610	0.109
	Age	0.124	0.024	0.160	5.230	0.000
	Work From Home	0.670	0.058	0.486	11.640	0.000
	Digital Communication Tools	0.079	0.042	0.079	1.850	0.066
	Work Flexibility	0.482	0.048	0.470	9.965	0.000

a. Dependent Variable: Work Life Balance

Table 6. Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.05	5.59	4.22	0.759	201
Residual	-1.031	1.000	0.000	0.352	201
Std. Predicted Value	-4.173	1.801	0.000	1.000	201
Std. Residual	-2.896	2.807	0.000	0.987	201

a. Dependent Variable: Work Life Balance

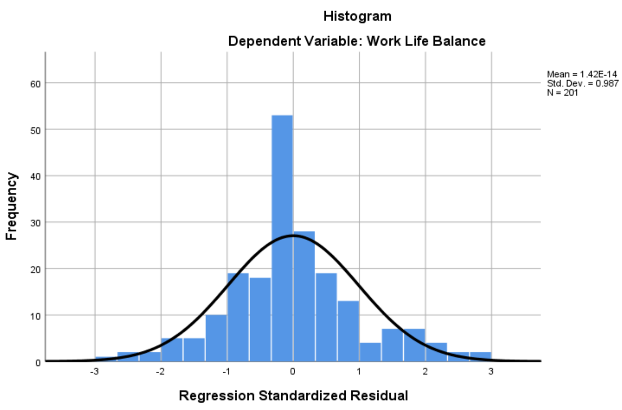


Fig. 2. Histogram

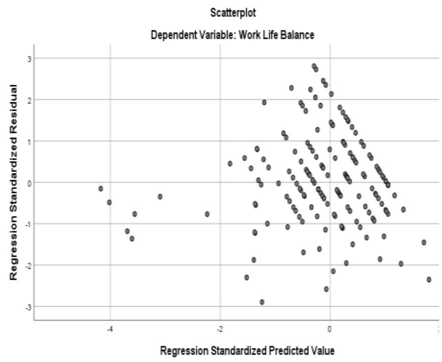


Fig. 3. Scatterplot

The regression analysis results reject the null hypothesis (H_01), demonstrating that WFH, digital communication tools, and work flexibility collectively and significantly predict WLB after gender and age as controlling variables. The overall model exhibited excellent instructive power, accounting for 82.3% of the variance in WLB ($R^2 = .823$, $p < .001$). Specifically, both WFH ($\beta = .486$, $p < .001$) and work flexibility ($\beta = .470$, $p < .001$) showed strong positive relationships with WLB, while digital tools approached but did not reach conventional significance ($\beta = .079$, $p = .066$). Among control variables, age significantly predicted WLB ($\beta = .160$, $p < .001$), whereas gender did not ($\beta = .051$, $p = .109$). These findings indicate that work-arrangements flexibility substantially enhance employees' WLB, with WFH and schedule flexibility being particularly impactful, while digital tools' role appears more nuanced. The model's robustness is further supported by the highly significant F-statistic (F = 181.55) and tight confidence intervals for key predictors.

H_{02}: Job satisfaction, career development, and compensation do not significantly predict work-life balance.

Table 7. Variables Entered/Removed[a]

Model	**Variables Entered**	**Variables Removed**	**Method**
1	Compensation, Job Satisfaction and Employee Well-being, Career Development Opportunities		Enter

a. Dependent Variable: Work Life Balance

b. All requested variables entered.

Model Summary[b]

Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	0.678	0.459	0.451	0.62

Predictors: (Constant), Compensation, Job Satisfaction and Employee Well-being, Career Development Opportunities

b Dependent Variable: Work Life Balance

Table 8. ANOVA[a]

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	64.222	3	21.407	55.727	0.000
	Residual	75.676	197	0.384		
	Total	139.898	200			

a Dependent Variable: Work Life Balance

b Predictors: (Constant), Compensation, Job Satisfaction and Employee Well-being, Career Development Opportunities

Table 9. Coefficients[a]

Model		Unstandardized Coefficients	Coefficients	Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.262	0.242		5.221	0.000		
	Job Satisfaction and Employee Well-being	0.579	0.089	0.554	6.530	0.000	0.381	2.623
	Career Development Opportunities	0.175	0.098	0.165	1.793	0.075	0.324	3.082
	Compensation	-0.013	0.087	-0.013	-0.145	0.884	0.359	2.782

a. Dependent Variable: Work Life Balance

Table 10. Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.00	4.98	4.22	0.567	201
Residual	-3.046	1.511	0.000	0.615	201
Std. Predicted Value	-3.912	1.340	0.000	1.000	201
Std. Residual	-4.915	2.438	0.000	0.992	201

a. Dependent Variable: Work Life Balance

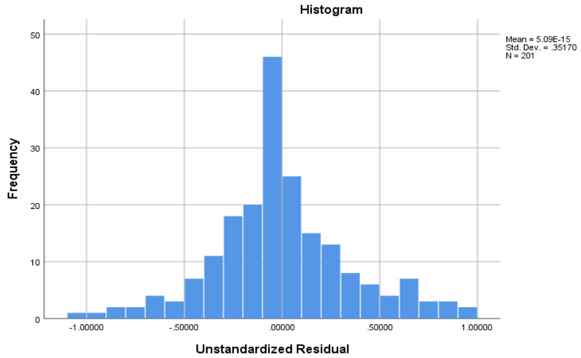


Fig. 4. Histogram

Fig. 5. Scatterplot

The regression results reject the null hypothesis (H_o2), revealing that job satisfaction, career development, and compensation collectively explain 45.9% of WLB variance (R^2=.459, p<.001). Job satisfaction emerged as the strongest predictor (β=.554, p<.001), showing a significant positive impact, while career development showed marginal significance (β=.165, p=.075). Compensation proved insignificant (β=-.013, p=.884), suggesting financial rewards alone do not enhance WLB in this context. The model showed no multicollinearity issues (VIFs<3.1) and identified some outliers (standardized residuals up to ±4.92), but overall demonstrates that psychological and growth factors outweigh compensation in promoting work-life balance among insurance professionals.

H_{03}: "Work-life balance does not mediate the relationship between flexible work arrangements (work-from-home, digital communication tools, and work flexibility) and employee well-being."

Examining whether WLB moderates the association of three particular workplace factors—work-from-home arrangements, digital communication tools, and work flexibility—and employee well-being helps one to test the third null hypothesis (H_o3). These specific independent variables caught our attention since they reflect the central elements of contemporary flexible work schedules that have changed the insurance industry following the epidemic. Although career development and job satisfaction are crucial elements, we gave WFH, digital tools, and work flexibility top priority since they are (1) directly under organizational policies, (2) most pertinent to changes in the modern workplace, and (3) theoretically connected to boundary management between both personal and work life. Results of this mediation analysis will show whether WLB is the psychological mechanism through which these particular work arrangements finally improve well-being (full mediation), contribute alongside other factors (partial mediation), or show no mediating role - conclusions that will enable companies strategically implement flexible work policies. In particular, the results will inform the way one can achieve the maximum benefits of remote work (WFH), use of technology (digital tools), and scheduling autonomy (work flexibility) through improved work-life balance.

Hypotheses by Each Independent Variable:

H_{03a}: Work-life balance is not a mediating factor between work-from-home and employee well-being.

Table 11. Mediation Analysis

```
***************** PROCESS Procedure for SPSS Version 4.2 *****************
         Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
   Documentation available in Hayes (2022). www.guilford.com/p/hayes3
**************************************************************************
Model  : 4          Y  : JSEScore         X  : WFHScore         M  : WLBScore
Covariates:     Age       Gender
Sample  Size:  201
**************************************************************************
OUTCOME VARIABLE:
 WLBScore
Model Summary
          R        R-sq        MSE          F        df1        df2
      .8262       .6826      .2254   141.2498     3.0000   197.0000      .00
Model
              coeff         se          t          p       LLCI       ULCI
constant      .0085      .2519      .0338      .9731     -.4882      .5052
WFHScore     1.1407      .0565    20.1783      .0000     1.0292     1.2522
Age           .1345      .0315     4.2657      .0000      .0723      .1966
Gender       -.1082      .0697    -1.5519      .1223     -.2457      .0293
**************************************************************************
OUTCOME VARIABLE:         JSEScore
Model Summary
          R        R-sq        MSE          F        df1        df2
      .7094       .5033      .3244    49.6444     4.0000   196.0000      .00
Model
              coeff         se          t          p       LLCI       ULCI
constant     1.8305      .3022     6.0574      .0000     1.2345     2.4264
WFHScore      .1322      .1188     1.1130      .2671     -.1020      .3664
WLBScore      .5356      .0855     6.2654      .0000      .3670      .7041
Age          -.0648      .0395    -1.6382      .1030     -.1427      .0132
Gender       -.3344      .0842    -3.9732      .0001     -.5004     -.1684
***************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************
Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .1322      .1188     1.1130      .2671     -.1020      .3664
Indirect effect(s) of X on Y:
             Effect     BootSE   BootLLCI   BootULCI
WLBScore      .6109      .1177      .3811      .8381
********************** ANALYSIS NOTES AND ERRORS ************************
Level of confidence for all confidence intervals in output:        95.0000
Number of bootstrap samples for percentile bootstrap confidence    5000
intervals:
                      ------ END MATRIX -----
```

Interpretation: Work-from-home (WFH) arrangements significantly increase WLB (b = 1.14, $p = .001$), lead to the increase of job satisfaction ($\beta = 0.54$, $p = .001$). Where the direct effect is not significant ($\beta = 0.13$, $p = .267$), which implied complete mediation, the unintended consequence of WFH on job satisfaction through WLB was significant ($\beta = 0.61$, 95% CI [0.38, 0.84]. Control variables found the age predicting the WLB ($\beta = 0.13$, $p < .001$) though not the job satisfaction, and gender difference significantly impacted job satisfaction (b = -0.33, $p < .001$). This indicates that work-life balance should be the priority of WFH policies by organizations. These findings attract the attention to the role of WLB because it is the critical process through which eventually WFH arrangements can lead to job satisfaction.

H_{03b}: The mediation between digital communication tools and employee well-being is not through work-life balance.

Table 12. Mediation Analysis between DCT and WLB

```
***************** PROCESS Procedure for SPSS Version 4.2 *****************
          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3
**************************************************************************
Model  : 4          Y  : JSEScore          X  : DCTScore          M  : WLBScore
Covariates:      Age       Gender
Sample Size:  201
**************************************************************************
OUTCOME VARIABLE:
 WLBScore
Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6737      .4538      .3879    54.5605     3.0000   197.0000       .000
Model
              coeff         se          t          p       LLCI       ULCI
constant     1.5794      .2816     5.6088      .0000     1.0240     2.1347
DCTScore      .6603      .0532    12.4114      .0000      .5553      .7652
Age           .0626      .0409     1.5317      .1272     -.0180      .1432
Gender       -.0813      .0922     -.8822      .3788     -.2631      .1005
**************************************************************************
OUTCOME VARIABLE:       JSEScore
Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .7632      .5825      .2727    68.3562     4.0000   196.0000       .000
Model
              coeff         se          t          p       LLCI       ULCI
constant     1.4568      .2542     5.7299      .0000      .9554     1.9582
DCTScore      .3702      .0595     6.2171      .0000      .2527      .4876
WLBScore      .3676      .0597     6.1543      .0000      .2498      .4855
Age          -.0538      .0345    -1.5604      .1203     -.1218      .0142
Gender       -.2915      .0774    -3.7642      .0002     -.4442     -.1388
****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************
Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .3702      .0595     6.2171      .0000      .2527      .4876
Indirect effect(s) of X on Y:
              Effect     BootSE   BootLLCI   BootULCI
WLBScore       .2427      .0551      .1356      .3496
*********************** ANALYSIS NOTES AND ERRORS ************************
Level of confidence for all confidence intervals in output:          95.0000
Number of bootstrap samples for percentile bootstrap confidence
intervals:                                                           5000
                       ------ END MATRIX -----
```

Interpretation: Digital communication tools (DCT) significantly forecast enhanced WLB (b = 0.66, p <.001), which in its turn translates to job satisfaction (β = 0.37, p <.001). WLB is an explanation of a portion of the relationship, but DCT too is a direct cause of job satisfaction (b = 0.37, p <.001), which is not mediated, WLB explains relationship but DCT also obviously increases job satisfaction. Although the age does not play a significant role, there is gender as a significant control variable with regard to job satisfaction (β = -0.29, p <.001). Women who express reduced levels of satisfaction indicate such as Strong explanatory power (WLB R2 =.45; job satisfaction R2 =.58, both p <.001) shows the models that despite the direct and indirect increase in job satisfaction as a result of digital tools, the benefits of the same are not limited to balance. Therefore, the companies ought to employ digital tools twice: with the aim of controlling boundaries (mediated effect) and enhanced connection (direct effect). The maintained gender difference attracts greater research.

H_{03c}: The work well-being is not dependent on the work flexibility and work-life balance.

Table 13. Mediation Analysis between WF and WLB

```
 ***************** PROCESS Procedure for SPSS Version 4.2 *****************
        Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
   Documentation available in Hayes (2022). www.guilford.com/p/hayes3
**************************************************************************
Model  : 4          Y  : JSEScore          X  : WFScore          M  : WLBScore
Covariates:    Age       Gender
Sample Size:  201
 *************************************************************************
OUTCOME VARIABLE:      WLBScore
Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .8228      .6770      .2294   137.6197     3.0000   197.0000      .0000
Model
              coeff         se          t          p       LLCI       ULCI
constant      .3347      .2405     1.3920      .1655     -.1395      .8090
WFScore       .8695      .0437    19.9139      .0000      .7834      .9556
Age           .0820      .0315     2.6045      .0099      .0199      .1441
Gender        .1624      .0732     2.2176      .0277      .0180      .3068
 *************************************************************************
OUTCOME VARIABLE:      JSEScore
Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .7446      .5544      .2910    60.9668     4.0000   196.0000      .0000
Model
              coeff         se          t          p       LLCI       ULCI
constant     1.4382      .2722     5.2842      .0000      .9014     1.9750
WFScore       .4171      .0854     4.8865      .0000      .2488      .5855
WLBScore      .2932      .0802     3.6533      .0003      .1349      .4514
Age          -.0448      .0361    -1.2411      .2160     -.1159      .0264
Gender       -.2107      .0835    -2.5229      .0124     -.3753     -.0460
 ***************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************
Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .4171      .0854     4.8865      .0000      .2488      .5855
Indirect effect(s) of X on Y:
             Effect     BootSE   BootLLCI   BootULCI
WLBScore      .2549      .0715      .1155      .3977
 ********************** ANALYSIS NOTES AND ERRORS ************************
Level of confidence for all confidence intervals in
output:                                                  95.0000
Number of bootstrap samples for percentile bootstrap confidence
intervals:                                                               5000
                          ------ END MATRIX -----
```

Interpretation: WLB is evidently enhanced by work flexibility (β = 0.87, p =.001), which increases job satisfaction (β = 0.29, p =.001). Work flexibility does also have a noteworthy straight effect on job satisfaction (β = 0.42, p <.001) and an indirect result through WLB (b = 0.25, 95% CI [0.12, 0.40]) so partially mediated. This means that, flexible work in part-time jobs as described by WLB can only explain the benefits of flexibility, but flexibility also has a direct impact on job satisfaction (through other aspects such as autonomy or reduced commute stress). Particularly, when it comes to gender, the effects of flexibility on the show are both negative (women experience less job satisfaction, β = -0.21, p =.012), yet positive (women experience more WLB, b = 0.16, p =.028). Age is a predictor of WLB (β = 0.08, p =.010) and not job satisfaction. The goodness of fit (WLB R2 =.68; job satisfaction R2 =.55, p <.001) indicates that the equilibrium between flexibility and satisfaction should be maximized by the company through a balance of flexible policies and specific support (e.g., gendered workload distribution).

The findings of the study have been of a good empirical evidence on how the various office designs relate to the well-being of employees in the insurance sector. It was examined that it was divided into three significant trends. Firstly, under flexible working schedules, work-at-home arrangements, and flexible work schedules, the findings regarding these issues are evident on their role in enhancing the WLB. The balance of employees gets much better with the level of control of the place of work and working hours which is reflected by the high positive coefficients (WFH β = 0.486; flexibility β = 0.470). This is definite with the theory of boundary that claim that enhanced general well-being occurs with autonomy in the regulation of work-life boundaries. Interestingly, although there existed some positive correlation of digital tools, the impact was a bit minor, which implies that technology does not suffice to abolish the fundamental schedule and place flexibility. Two, the research on the psychological factors generated shocking new knowledge of what it truly takes to have work-life balance. Job satisfaction was found as the single strongest predictor (b = 0.554), therefore, outperforming the possibility of career development and remuneration. It means that balance can be based rather on emotional relation of the employees to the work and feeling of achievement than on formal careers and monetary rewards. The low effectiveness of compensation (β = -0.013) in particular is such an uphill task to accept that a call to real job engagement might be more encouraging than dumping money into work-life balance issues. Third, the mediation research study demonstrated complicated mechanisms of action of these variables. The whole mediation of WFH (β = 0.61) depicts that the benefits of the practice can be enjoyed only when it entails the promotion of the work-life balance. Digital tools / flexible schedules, in its turn, was also partially mediated, and it is a sign that it positively influences well-being, not only because of the development of balance, but also because of other processes, e.g. the reduction of the stress during travelling or the increase of productivity. It is also complicated by gender implications, which draw out the fact that as much as flexibility is advantageous among women in terms of balance; the advantages cannot necessarily translate into job satisfaction and there is a need to illustrate more imbalances in the workplace.

5.CONCLUSION

Research outcomes implicate the organizational practice and policy particularly in the insurance industry or any other industry. Overall, the results can be used as a strong case on the need to institutionalize flexible work schedules especially remote work and flexible schedules as they have a direct and positive result on WLB. Findings, however, warn against a solution that is universal in application. Such policies should be adopted very sparingly by organizations and training using digital tools should be used to prevent overload (as is the case with the use of digital tools alone resulting in poor performance) and clear policies should be ensured in maintaining the boundaries between work-life in flexible work schedules. The unpredicted gender character and the fact that job satisfaction takes precedence over payment is the signifier of the required alterations in HR strategy. Companies should complement flexible policies with 1) regular work satisfaction surveys, 2) targeted intervention to reduce the gender disparities in the work distribution and reward allocation, and 3) leadership development to formulate the meaningful engagement among employees. The current research should be complemented with another research as to why women do not enjoy the same satisfaction when the WLB increases, perhaps the factors of unequal family responsibilities within the home or any discrimination in the workplace. The longitudinal research works would be able to track the dynamics of these relationships as more accommodating work is being accommodated. Lastly, the existing studies are a roadmap towards the path that would make more sustainable and fair working conditions that would make the flexibility the basis of holistic well-being and not a choice. By considering both the structural (e.g. WFH policies) and the cultural (e.g. job satisfaction drivers) sides of the employees, the companies can write the rules of their workers to allow them to successfully develop both personal and professional lives.

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Fraud's Impact on the Banking Industry: An In-Depth Examination

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ABSTRACT

The banking industry has grown significantly in recent decades, and India's economy is one of the fastest-growing in the world. An essential component of every economy is the banking sector. India's banking sector has grown significantly since economic liberalization and banking sector reforms were put into place in 1991. Nevertheless, the industry still faces financial difficulties in spite of the RBI's strict supervision. The purpose of this study is to find out how often financial frauds are in the banking sector. The author examines the financial issues that the industry is currently facing, especially those brought on by fraud. The rising amounts of non-performing assets (NPAs) seen in Indian scheduled public sector banks in recent years are the specific topic of this article. NPAs and poor lending rates are now posing problems for a sizable portion of Indian banks. Scams and the willful non-repayment of loans by powerful defaulters are two of the main issues facing banks today

KEYWORDS: Non Performing Asset, Banking Fraud, Financial Scam, Schedule Public sector Bank

1. INTRODUCTION

During the last few years, the banking industry of India has been passing through banking frauds. Towards a Finer system, the banking Divsion needs to be Active towards reporting and reaction. Governments, regulators and the banking fraternity are all at serious concern. Banking business indeed is risky business, but these days with high frauds rate, banks cannot afford to simply sit back at an inefficiently controlled mechanism in place. Banks have been investing heavily in frameworks, systems, and controls over time for fraud risk management.

"The Reserve Bank of India (RBI) defines fraud as a purposeful act of either omission or commission by an individual that occurs during a banking transaction or within the accounting records maintained, whether manually or through computerized systems in banks. This act leads to an unjust benefit for an individual, either temporarily or otherwise, and may or may not result in a financial loss to the banking institution. PSBs in India are witnessing an increase in nonperforming assets that are hurting the bottom line. There is considered to be a nexus between non-performing assets and banking fraud. Public sector banks have been at the receiving end of nearly all bank frauds. During the last four years of 2021–2024, Scheduled commercial Bank frauds was close to Rs 86,000 crore, with around 58,700 Cases.

The Association of Certified Fraud Examiners conducted an analysis of the majority of Scam cases for the Global Fraud Study 2024, focusing on the banking and financial services, government and public administration, and manufacturing sectors. The frequency, nature of intricacy, and cost engaged in banking frauds have increased substantially, to a point where it is making regulators like the RBI extremely concerned. PSBs in India alone lose about Rs. 21,700 crores due to financial crimes in the past four years. With every year that goes on, this sum keeps rising. Most of the time, bank employees are implicated, although occasionally, outsiders' technical initiatives have been to blame. Evolution of Fraud in banks: Fraud in the past was restricted to the circulation of counterfeit money, some of which made their way into the banking system, the printing of counterfeit security documents such as demand drafts, pay orders, and checks, and the granting of loans to known parties without verifying their financial stability and ability to repay the loan proposal or proposals' earning proposition.

As technology has advanced, cybercrime has emerged as the current threat. As time goes on, bankers now need to learn more advanced terminology. Benami accounts, in which the account holder is unaware that they have a bank account and, if they have, the Process (number & kind of the same) are completely Hidden from A/C holder, have supplanted hawala transactions of previous years.

Definition

Fraud, as defined in Section 17 of the Indian Contract Act of 1872, encompasses various actions undertaken by a contracting party, or with their consent, or by their representatives, with the intention of misleading another party or their representative, or to persuade them to engage in the contract:

- The assertion of a falsehood by an individual who does not hold it to be true;
- The deliberate withholding of information by an individual who possesses knowledge or belief regarding that information;
- A commitment made without the genuine intention of fulfilling it;
- Any other action designed to mislead;
- Any act or omission that is explicitly classified as fraudulent by legal statutes.

The Reserve Bank of India (RBI), as a statutory body, has not provided a specific definition of "fraud" in its regulations concerning frauds. Nevertheless, the RBI Working Group's Report on Information Security, Electronic Banking, Technology Risk Management, and Cyber Frauds has defined fraud in the context of electronic banking as any wrongful action or failure to act by an individual during a banking transaction that results in a temporary or otherwise gain for someone, whether or not it leads to a loss for the bank.

2. REVIEW OF LITERATURE

This indicates that the economy of India requires banks, argues Jain, Vipin et al. 2020, Banks are regarded as the cornerstones of every country's finance system. Robust finance provides a basis to advance the economics. The primary reason for an IT revolution within the Indian Banking sector is attributed to information technology. Shettar, M. R. (2019) sought to investigate India's involvement in digitalization. The research also examined the elements that affect the adoption of online banking. Additionally, the article discusses recent advancements in digital banking within India and technological innovations in Indian banks. The study employs a descriptive approach utilizing secondary data. Jagtap V.M. (2018) examined the needs and advancements in digitalization within the banking industry, focusing on various digitalization methods including Automatic Teller Machines, Real-time Gross Settlement, Electronic Funds Transfer from Point of Sale Terminals, Electronic Compensation Services, and Telebanking. The study also highlighted the growth of the Indian banking sector during 2015, 2016, and 2017, specifically in terms of the percentage increase in payments due to digitization. Sujana M.V.S. (2018) examined the increasing Digital Evolution in the banking industry. The purpose of the survey was to assess customers' awareness of the digital transformation in banking. Additionally, the study highlights various benefits and drawbacks associated with banks' adoption of digital technologies. Nayak R. Breakdown the Viability of Modern banking in rural areas in 2018. Examined are a number of Concern & Troubles associated with the Modernization of rural banking. The primary goal of the study is to Explore the different aspects that influence the Modernization of rural banking, including communication networks, education, occupation, income, gender, and socioeconomic position. According to Albrecht (1996), indicators of weak internal controls increase the likelihood of fraud. Examples of these symptoms include a poor control environment, insufficient physical safeguards, absence of independent verification, inadequate authorizations, lack of proper documentation and record-keeping, absence of role separation, bypassing of established controls, and a deficient accounting system. Calderon and Green (1994) conducted an analysis of 114 documented corporate fraud cases published in the Internal Auditor from 1986 to November 1990. Their findings indicated that 60 percent of these fraud occurrences were attributable to deficiencies in control mechanisms, inadequate documentation, and insufficient segregation of duties. Furthermore, the study revealed that 45 percent of the reported incidents involved individuals in professional and managerial positions.

Beirstaker, Brody, and Pacini (2005) outlined various methods for preventing and detecting fraud. These strategies include implementing Scam policies, establishing fraud hotlines, conducting employee reference checks, performing fraud vulnerability assessments, reviewing vendor contracts and sanctions, utilizing analytical reviews, ensuring password protection, and using discovery sampling.

According to research by Khanna & Arora (2005), the main causes of bank frauds are the following: inadequately trained staff, overworked employees, competition, and low compliance levels-the extent to which the prudential measures and procedures set up by the RBI to Prevent frauds are followed.

In 1995, Smith provided a taxonomy of embezzlers. According to him, embezzlers are of the "opportunist type," rapidly identifying any vulnerability in internal control and taking advantage of the chance to profit from it.

By analysing the literature and evaluating the current scenario, several key reasons for the increase in bank frauds have been identified-

- Increased Awareness and Opportunities: The better education makes more people realize the opportunity of exploiting bank frauds for personal gain.
- Impersonal Banking: The more impersonal banking is, the greater the chances of fraud, because bankers know the clients only by their signatures.
- Expansion Boom and Lax Training: Because of the explosive expansion of the banking industry in India, it brought to India skilled and experienced workforce workers; therefore, workers are conducting tasks haphazardly.
- Lack of Scrutiny and Time Pressure: Just because banking is a high-pressure industry, they don't have time to screen papers properly, and such is a reason why this fraud becomes more difficile to detect.
- Systemic Weaknesses and Moral Decline: The increase in fraud is due to the decline of moral principles, the need for fast cash, and laxer regulations. Employee ignorance and apathy also amplify non-compliance and elevated fraud risks.

3. METHODOLOGY

To meet the study's goals, the author utilizes historical data from the RBI and statista.com. This research relies solely on secondary data sourced from the RBI website, Government Reports, academic Magazine, and newspapers.

Objective

- To understand and Examine the Hidden causes behind the Increase of frauds in the Banking Industry of India.
- To suggest appropriate and suitable measures to address the Problem of fraud in the Banking Industry of India

4. DATA ANALYSIS & FINDINGS

Table 1- Banking Fraud During 2021-22 to 2023-2024 (in Crores)

Bank Group	**2021-2022**		**2022-2023**		**2023-2024**	
	Cases of Fraud	**Fraud Amount**	**Cases of Fraud**	**Fraud Amount**	**Cases of Fraud**	**Fraud Amount**
Public Sector Bank	3,044	32,288	3,392	18,750	7,472	10,507
Private Sector Bank	5,312	10,653	8,979	6,159	24,210	3,170
Foreign Banks	494	1,206	804	292	2,899	154
Financial Institutions	9	1,178	10	888	1	-
Small Finance Bank	155	30	311	31	1,019	64
Payments Bank	30	1	68	7	472	35
Local Area Banks	2	2	-	-	2	-
Total	9,046	45,358	13,564	26,127	36,075	13,930

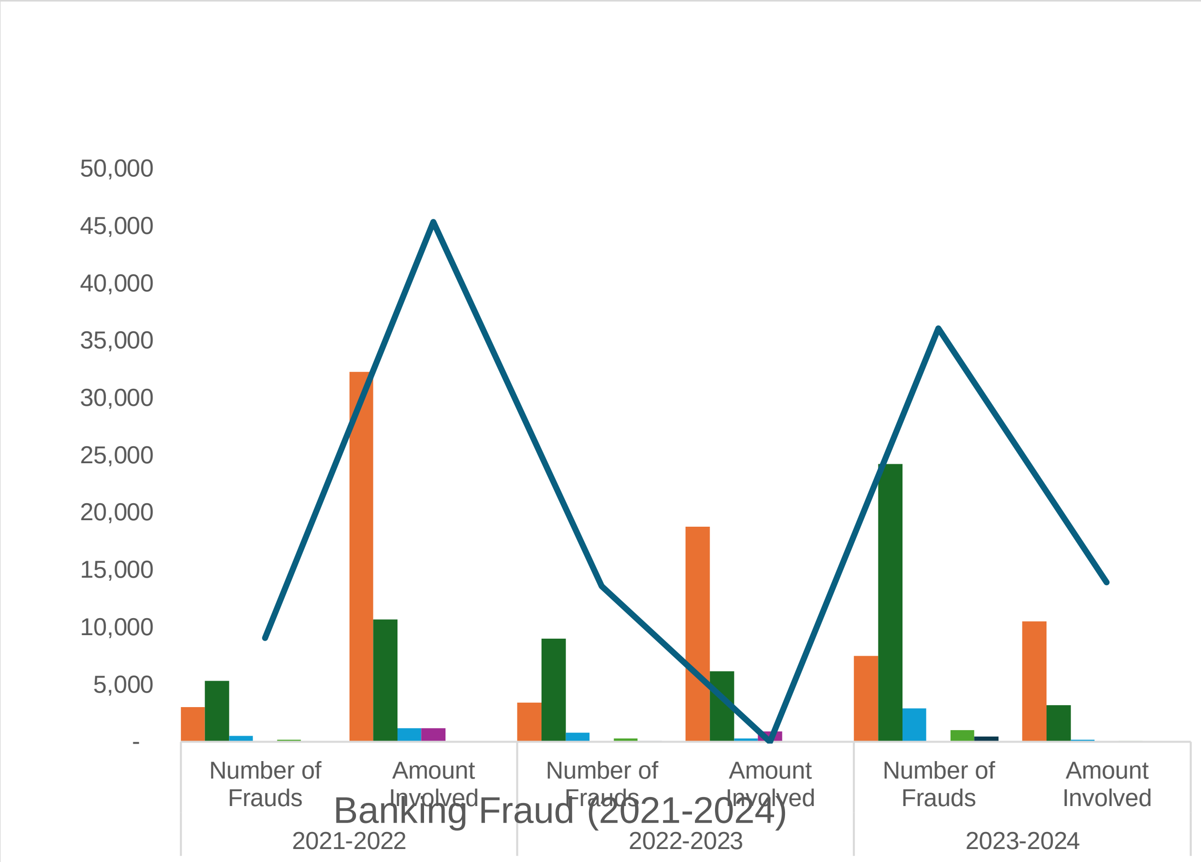


Figure 1- Banking Fraud During 2021-22 to 2023-2024

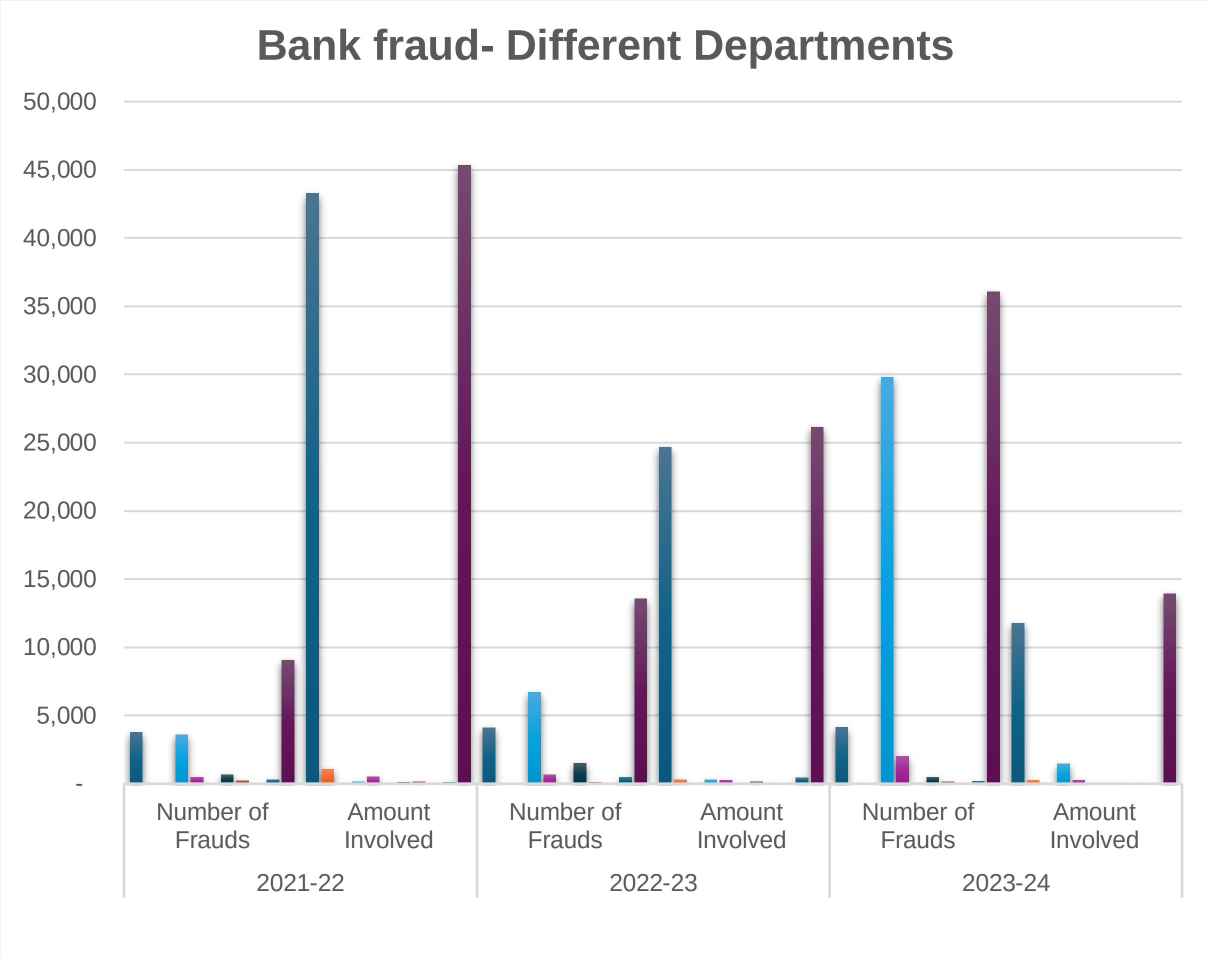
Source- www.rbi.org

According to Reserve Bank of India from 2021-22 to 2023-24, incidents of banking fraud skyrocketed by an astonishing 298.80%, though the total amount involved fell significantly by 69.29%. The sharpest rise was recorded in Private Sector Banks, where cases soared from 8,979 in 2022-23 to 24,210 in 2023-24, marking a 169.7% increase. Public Sector Banks also experienced a notable increase of 120.3%, while Foreign Banks saw the steepest rise with a dramatic 260.6%.

Even with the uptick in fraud cases, the financial loss per incident has decreased, which is probably a result of more rigorous oversight and quicker detection methods. However, delays in fraud detection are still a problem, as significant cases have relied on lengthy investigations for resolution. It's crucial to bolster regulatory frameworks and enhance fraud prevention measures to manage these risks and safeguard the financial industry.

Sector-wise, the Private Sector Banks saw the highest fraud increase, jumping from 8,979 cases in 2022-23 to 24,210 cases in 2023-24 (a 169.7% increase), while Public Sector Banks also experienced a sharp rise from 3,392 to 7,472 cases (120.3% increase). Foreign Banks saw an increase of 260.6%, while Small Finance Banks and Payments Banks also recorded notable rises. Interestingly, Financial Institutions had almost no fraud in 2023-24, and Local Area Banks remained at negligible levels.

Table 2- Bank Fraud Case- Different Department (in Crores)



Different Department	2021-22		2022-23		2023-24	
	Cases of Fraud	**Fraud Amount**	**Cases of Fraud**	**Fraud Amount**	**Cases of Fraud**	**Fraud Amount**
Advances	3,782	43,272	4,090	24,685	4,133	11,772
Off-balance Sheet	21	1,077	14	285	11	256
Forex Transactions	7	7	13	12	19	38
Card/Internet	3,596	155	6,699	277	29,802	1,457
Deposits	471	493	652	258	2,002	240
Inter-Branch A/C	3	2	3	-	29	10
Cash	649	93	1,485	159	484	78
Cheques/DDs, etc.	201	158	118	25	127	42
Clearing Accounts	16	1	18	3	17	2
Others	300	100	472	423	171	35
Total	9,046	45,358	13,564	26,127	36,075	13,930

Figure 2- Bank Fraud Case- Different Department During 2021-22 to 2023-2024

Source- www.rbi.org

From 2021-22 to 2023-24, there's been a noticeable rise in banking fraud cases, although the total funds involved have been on the decline. The most alarming increase was in card and internet fraud, which jumped from 3,596 cases in 2021-22 to a staggering 29,802 in 2023-24, making it the prime target for fraudsters. In contrast, fraud related to advances, once linked to the highest monetary losses, also saw a drop in the amount lost—falling from Rs 43,272 crore in 2021-22 to Rs 11,772 crore in 2023-24. Additionally, there's been a rise in deposit-related and forex transaction frauds, while instances involving cheques, drafts, and inter-branch accounts remained fairly low. The surge in digital banking fraud signals a pressing need for improved cybersecurity and more robust fraud detection systems to mitigate financial losses.

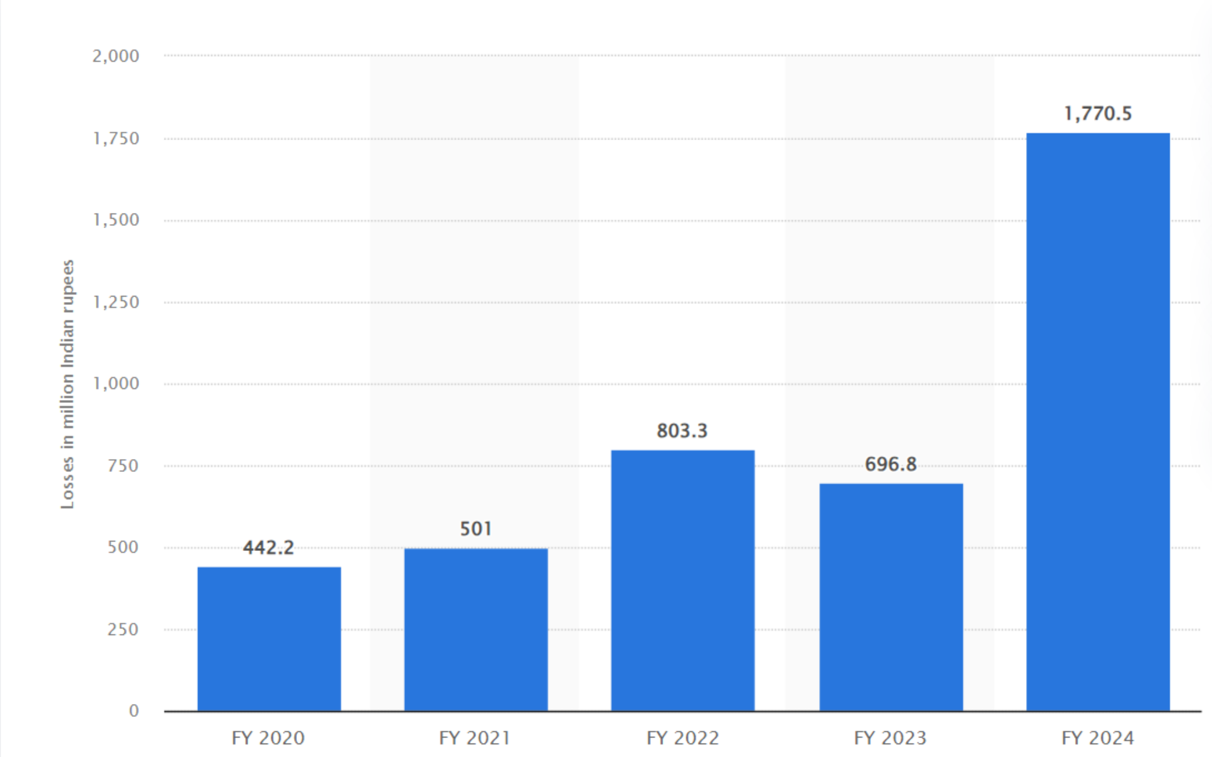


Figure- 3. Cyber Fraud
Source- www.statista.com

Overview:

Cyber Fraud Losses In 2024, India faced losses exceeding **1.7 billion rupees** due to fraud linked to credit cards, debit cards, and internet banking. There Were Increased Cybercrime over 740,000 cases reported just from January to April 2024.

Main Causes

- A surge in digital transactions and internet banking.
- Higher internet penetration combined with uninformed users.
- Advanced fraud methods such as phishing, SIM swapping, and card cloning.

Response

- The RBI and other organizations are implementing stricter regulations.
- There's a move towards using AI and machine learning for fraud detection.

- There's also a greater emphasis on boosting customer awareness and utilizing multi-factor authentication (MFA).

2022-2023		2023-2024	
Occurrence of Fraud	**Amount Involved**	**Occurrence of Fraud**	**Amount Involved**
Before 2013-14	1,444	Before 2013-14	2,133
2013-14	1,082	2013-14	1,327
2014-15	828	2014-15	1,616
2015-16	494	2015-16	951
2016-17	6,526	2016-17	858
2017-18	2,985	2017-18	781
2018-19	4,613	2018-19	1,196
2019-20	1,253	2019-20	835
2020-21	2,171	2020-21	807
2021-22	3,164	2021-22	844
2022-23	1,567	2022-23	1,073
		2023-24	1,509
Total	26,127	Total	13,930

Figure- 4. Vintage of Fraud Reported in 2022-23 and 2023-2024
Source-www.rbi.org

The data reveals a notable change in how fraud is detected over the years. During 2022-23, a staggering Rs 26,127 crore in fraud was uncovered, but this figure dropped to Rs 13,930 crore in 2023-24. A large share of the fraud cases identified in 2023-24 actually stemmed from previous years, particularly before 2013-14, indicating some delays in catching these issues.

Frauds from the years 2016-17 (Rs 6,526 crore) and 2018-19 (Rs 4,613 crore) had the biggest financial repercussions in 2022-23. In contrast, during 2023-24, the most impactful fraud cases came from 2014-15 (Rs 1,616 crore) and 2013-14 (Rs 1,327 crore). The trend of decreasing total fraud amounts in recent times points to enhanced risk management, better fraud detection methods, and more stringent regulations. However, the long delays in detection highlight the necessity for stronger real-time fraud monitoring systems.

Table- 3. Current Structure for filing Police/CBI Complaint for Fraud

- The Reserve Bank of India (RBI) established a fraud monitoring cell in June 2016.
- The RBI has mandated that the responsibility for fraud risk management, monitoring, and

Category of bank	Amount involved in the fraud	Agency to whom complaint should be lodged	Other Information
Private Sector/ Foreign Banks	Rs.1 lakh and above	State police	
	Rs.10000 and above if committed by staff	State police	
	Rs.1 crore and above	Serious fraud investigation office (Ministry of Corporate Affairs)	In addition to state police
Public Sector Banks	Below Rs. 3 crore	State police	
	Rs.3 crore and above and up to Rs.25 crore	CBI	Anti-corruption branch of CBI (where staff involvement is prima facie evident) Economic offences wing of CBI (where staff involvement is prima facie not evident)
	More than Rs.25 crore	CBI	Banking Security and Fraud Cell (BSFC) of CBI (irrespective of the involvement of a public servant)

Source: Reserve Bank of India.

investigation lies with the bank's CEO, the Audit Committee of the Board, and the Special Committee of the Board, particularly for significant fraud cases.

- The RBI requires banks to report fraud incidents and set aside provisions for them within a maximum of four quarters from the detection date. Banks must strictly follow the existing guidelines for classifying and reporting fraud cases. Typically, banks should provision for the full amount owed to them or for which they are responsible (including deposit accounts) as soon as a fraud is identified.
- The RBI has clearly outlined the reporting structure.

Type of fraud

To maintain uniformity in reporting, the RBI has classified frauds according to the Indian Penal Code into the following categories:

- Misappropriation and violation of fiduciary responsibilities
- Fraudulent payments made using forged documents, altered accounting records, or fabricated accounts
- Unauthorized provision of credit facilities
- Carelessness and errors in cash management
- Fraud and forgery
- Irregularities in foreign exchange dealings
- Other types of fraud not covered by the categories listed above

Causes of banking fraud

The following variables are identified by a study based on the instances as being responsible for frauds in public sector banks:

1. Staff members' active participation, either alone or with outside assistance.

2. Bank employees' disregard for established protocols and directives.
3. Manipulation or falsification of financial papers and instruments.
4. Coordination to defraud the banks by business, public personnel, and top bank executives.

The Central Vigilance Commission identified a number of flaws or shortcomings in the system as the reasons, such as

1. Banks' inability to evaluate the technical aspects of projects for financing
2. Due to a lack of competence and expertise.
3. The banks did not do adequate due diligence.
4. The use of shell corporations by business promoters to divert cash.
5. Fabrication of information
6. Frauds committed by companies.

Suggestions

- Independent Specialized Cadre: Assemble a committed group of banking, RBI, and CBI professionals with legal and financial knowledge to conduct prompt investigations into financial irregularities.
- Know Your Markets: Banks should evaluate the sectors to which they extend credit, taking into account global interdependencies and economic considerations.
- Internal Rating Agency: Create strong internal rating systems to assess big projects and make sure that differences between internal and external ratings are thoroughly examined.
- Use of Latest Technology: Use data analytics and sophisticated IT systems to detect fraud in real time and identify early warning signs.
- Regional Outliers Surveillance Techniques identical to that used by SEBI will extend RBI surveillance into early identification of regional transaction anomalies and possible frauds.
- Punitive Lawsuit Against Third Parties Auditors, Accountants and rating Agencies Involved in Frauds

5. CONCLUSION

Business and earnings in the Indian banking industry have increased manifold, but the increase in business and earnings has been matched by an increase in fraud cases, which damages the institutions' reputation and causes losses. There is still a lack of forensic technologies that can detect possible fraud, despite banks' growing awareness of the need to improve fraud risk management. Banks must combine their knowledge with cutting-edge technology and data analytics to create a more methodical strategy in order to solve this. Fraud problems are caused by inadequate supervision, antiquated detection techniques, lax laws, and a lack of knowledge among staff members and clients. This is made more complicated by the increase in online banking and cyber threats; hence it is very important that banks regularly update their security procedures. Implementing early fraud detection tools, training employees on whistleblower procedures, and improving cybersecurity are all examples of effective solutions. Demands for more cooperation between banks and authorities as well as tougher penalties for fraudsters are also growing. In conclusion, lowering the risk of fraud requires proactive monitoring, cutting-edge technology, and effective fraud protection techniques.

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AI And Consumer Satisfaction: Analyzing Perception Metrics Concerning the Product and Services Offerings of Commercial Banks in Vadodara

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ABSTRACT

Because it makes financial transactions, investments, and savings easier, the banking industry is essential to economic growth. The expectations that customers have of commercial banks have changed dramatically with the advent of digital transformation. This study offers a thorough examination of customer satisfaction and perception indicators pertaining to the goods and services offered by Vadodara's commercial banks. The goal of the study is to comprehend the main factors that influence customer happiness, such as interest rates, staff response, digital banking adoption, service quality, and personalized services. To assess 180 respondents' experiences with commercial banks, both individual and business clients participated in the study. The study uses statistical methods like the Chi-Square test and descriptive analysis to investigate the connection between customer happiness and perception. The results show that competitive interest rates, effective customer service, and digital banking services are some of the main elements influencing customer happiness. However, issues like inconsistent customer care, lack of personalized banking experiences, and service delays have a detrimental effect on client perception. The study also looks at how artificial intelligence (AI) and financial technology (Fintech) are increasingly influencing consumer experiences. Traditional banking operations are changing as a result of the growing use of AI-driven banking services like chatbots, fraud detection, and tailored financial recommendations. Customers' preference for digital-first solutions emphasizes how important it is for commercial banks to constantly innovate. This study offers significant insights for banks looking to improve customer happiness and retention in a competitive financial world. To keep up with changing customer expectations, banks must invest in AI-powered customer service, risk management systems, and tailored digital banking. The findings highlight the need for strategic improvements in service delivery to keep commercial banks competitive versus new fintech alternatives. The study contributes to the continuing discussion about customer happiness and digitalization in the banking sector.

KEYWORDS: AI, Customer Satisfaction, Service Delivery, Risk Management System

1. INTRODUCTION

Satisfaction is measured at the individual level, even though it is almost always reported at an aggregate level. It can and usually is measured in multiple dimensions. A hotel might, for example, encourage visitors to rate their experiences with the front desk and check-in procedure, the facilities in their rooms, the restaurants, and so forth. In India, banking establishment dates back to the 18th century. The first banks were the Bank of Hindustan, which was founded in 1790, and the now-defunct General Bank of India, which was founded in 1786. India's oldest bank is the State Bank of India. Originally established as the Bank of Calcutta in June 1806, it soon adopted the name Bank of Bengal. Along with the Bank of Bombay and the Bank of Madras, it was one of the three presidency banks, having been established under licensing from the British East India Company. For a considerable amount of time, the Presidency banks functioned as quasi- central banks, just like their predecessors. The Indian Imperial Bank, which was created by the merger of the three banks in 1921, changed its name to the State Bank of India in 1955 after India gained its independence.

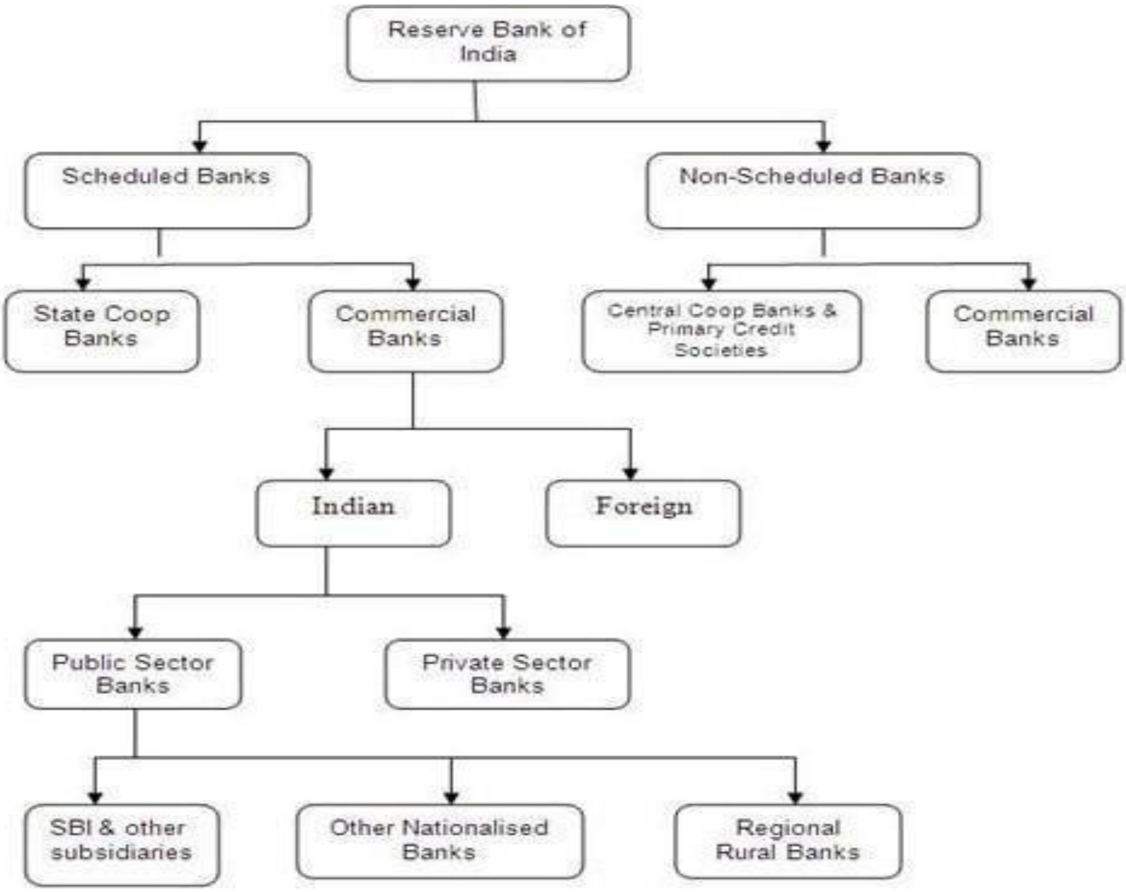
For a considerable amount of time, the Presidency banks functioned as quasi-central banks, just like their predecessors. Indian businessmen in Calcutta established the Union Bank in 1839, but the 1848–1849 economic crisis caused it to fail. Established in 1865 and still operating today, the Allahabad Bank is India's oldest joint stock bank. (Joint shares Bank: A company that issues share and demands shareholders to be held accountable for the company's debt.) It wasn't the first, though. The Bank of Upper India, which was founded in 1863, maintained this distinction until its demise in 1913, when a portion of its assets and liabilities were given to the Alliance Bank of Shimla.

Foreign banks also started to open in the 1860s, particularly in Calcutta. Following its establishment in Calcutta in 1860 and Bombay in 1862, the Compote d'Escompte de Paris opened offices in Madras and Pondicherry, a French colony at the time. HSBC established an office in Bengal in 1869. Calcutta became India's busiest port and a key finance center due to the British Empire's trade.The first Indian-only joint stock bank was the Oudh Commercial Bank, which was established in Faizabad in 1881. It failed in 1958. Next was the Punjab National Bank, one of the largest banks in India today, established in Lahore in 1895.

The Swadeshi movement served as inspiration for the establishment of banks between 1906 and 1911. The Swadeshi movement inspired local entrepreneurs and politicians to build banks for and on behalf of the Indian populace. The Central Bank of India, Bank of India, Bank of Baroda, Corporation Bank, Indian Bank, and Bank of India are just a few of the banks that were established at that period and are still in operation today. Many private banks were founded in the formerly unified districts of Dakshina Kannada and Udupi, which were known as South Canara (South Kanara) district, as a result of the Swadeshi movement's fervor. Four nationalized banks and a sizable private sector bank were established in this district. The "Cradle of Indian Banking". Despite the Reserve Bank of India's laws, regulations, and restrictions, all Indian banks—aside from the State Bank of India, or SBI—remained privately owned and operated. The Indian banking industry had developed into a crucial tool for fostering the nation's economic expansion by the 1960s. At the same time, it had grown to be a significant employer, and there was debate over nationalizing the banking industry. The nation's prime minister at the time, Indira Gandhi, wrote a paper titled "Stray thoughts on Bank Nationalization" at the annual conference of the All-India Congress Meeting, detailing the government's plans

The Indian financial system was significantly impacted by the IT revolution. In India, online banking was introduced as a result of computer use. With India's banking industry now exposed to the global market following economic liberalization in 1991, the country's utilization of modern innovation and computerization has multiplied. Without the use of computers and information technology, Indian banks were having trouble competing with foreign banks in terms of customer care. The Reserve Bank of India's Deputy Governor, Dr. C. Rangarajan, served as the chairman of the Committee on Mechanization in the Banking Industry, which the RBI established in 1984.

Structure of Indian Banking System



Background of the study

Monetary policy, economic growth, and financial intermediation are all significantly influenced by the banking industry. Simple moneylending gave way to intricate financial institutions in the past. Banks increasingly provide cutting-edge services including online banking and fintech integrations as a result of the growing digital transformation. But issues like financial crises, shifting regulations, and competition from fintech companies continue to exist. Convenience, security, and individualized services are much more important to customers. With an emphasis on service quality, digital banking, and overall customer experience, this study investigates how Vadodara consumers perceive and are satisfied with banking services.

Problem statement

Every industry has been negatively impacted by the COVID-19 epidemic. Traditional banking practices have been disrupted. The banking industry is changing and becoming increasingly reliant on technology. Additionally, because of the current circumstances, the way that customers view and anticipate the goods and services that banks offer has evolved.

Problem statement-

“An in-depth analysis of customer perception and satisfaction metrics concerning the product and services offerings of the commercial banks in Vadodara.”

Objectives of the Study

1. To ascertain how consumers view different aspects of commercial banks' service quality.
2. To examine how consumers view online banking services, loan products, and deposits.
3. To compare the general level of client loyalty and satisfaction across banking sector.

Research Hypothesis

H_0 (Null Hypothesis): Customers' opinions of commercial banking services and products and their level of satisfaction with the bank as a whole do not significantly correlate.

H_1 (Alternative Hypothesis): Customers' opinions of commercial banking services and products and their level of satisfaction with the bank as a whole are significantly correlated.

2. REVIEW OF LITERATURE

A Study on Customer Satisfaction of Commercial Banks: Case Study on State Bank of India" by Amruth Raj Nippatlapalli (2013) A. Nippatlapalli investigated the level of customer satisfaction with State Bank of India. The study was conducted using the primary data collected from 120 respondents. The technique used was simple random sampling. Explanatory research was used as the research design. Bar charts, Spearman's Rank Correlation, and percentage analysis were used to examine and interpret the data. 92% of participants said that SBI Bank satisfied all of their banking needs, the research states. Vershinina Olga's 2017 research, "A study of Russian bank PAO 'SBERBANK' on customer satisfaction in the banking industry" Assessing PAO "Sberbank's" level of customer satisfaction was the aim of this research. The theoretical framework of the study examines the idea of "customer satisfaction" and assesses several methods that may be used to measure it. The thesis uses SEVQUAL dimensions, ISO standards, and the profit- chain model as the basis for an empirical inquiry. Customer satisfaction in the banking industry: a comparative study of Ghana and Spain" by Aborampah Amoah-Mensah (2010) This study compares the perceptions of Ghanaian and Spanish customers about the quality of banking services. The sample size was 1400 people from 24 localities in both countries. In both countries, one set was provided in the form of questionnaires based on SERVPERF's five dimensions. Systematic random sampling was used to get the data. Grigoroudis et al. and G. Mihelis E.'s "Measuring customer satisfaction in the private bank sector" (2001) They found that private sector banks use customer satisfaction metrics. A well-crafted questionnaire was used to collect primary data from 80 respondents for the study. The study was carried out using a descriptive cross- sectional approach. "Impact of Service Quality on Customer Satisfaction: An Empirical Study in Selected Public and Private Sector Banks" by Mohd Afroz Pasa and Dr. M. Razashah (2018). This article's goal was to ascertain how metrics of service quality affected customer happiness. A descriptive research approach was used for the investigation. Primary data was used for analysis. "Impact of Service Quality on Customer Satisfaction of Public Sector Commercial Banks: A Study on Rural Economic Context" by H.M.G.Y.J. Hennayake, published in 2017. The survey's goal was to find out how satisfied customers were, particularly in rural regions. Data was gathered via a survey that included 210 respondents from the Puttlam District. A descriptive approach was used to build the relevant system. In 2015, Jiana Daikh introduces "A Research Proposal: The Relationship between Customer Satisfaction and Consumer Loyalty." Daikh J. looked at the connection between customer loyalty and buyer steadfastness. With an emphasis on companies that deal with money, the study's goal was to investigate the connection between shopper loyalty and consumer unwaveringness and apply it to all market enterprises, including goods and services. Analysis of customers' satisfaction with banking services: a case of standard chartered bank" by Hussein Mohamed Mkoma (2014) Examining Tanzanian Standard Chartered Bank clients' satisfaction with banking services was the aim of this study. An Analysis of Consumer Contentment with Public and Private Sector Banking Services [with Particular Reference to Andra Pradesh's Anantapur District]" by M.E. Doddaraju (2013) This study looks at how customer satisfaction levels in public and private sector banks are impacted by online banking services. 525 randomly selected respondents provided primary data using a methodical questionnaire. 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Rust and Oliver's "Service Quality: Insights and Managerial Implications from the Frontier" (1994). This book offers management insights into service quality with a focus on the connection between profitability and service quality. The authors look at a variety of industries, including banking, and emphasize how important it is to include steps to improve service quality in the overall business plan. Zeithaml, Parasuraman, and Berry's "The Behavioral Consequences of Service Quality" (1996).This report expands on SERVQUAL research by examining the behavioral impacts of perceived service quality, including customer loyalty and word-of-mouth recommendations.

3. METHODOLOGY

The methodology and design adopted for the study is as follows:

Research Design: Descriptive research is the method used to examine how customers feel about and are satisfied with commercial banks. The researcher uses descriptive study to explain the features of circumstances.

Data Collection: Google forms were utilized to poll commercial bank clients in order to collect the core data for the study. Using a well-designed questionnaire, the sample unit's primary data was gathered.

Surveys/Questionnaires: To gather quantitative data on consumer perception, satisfaction, and experience with commercial banking services. Design a structured questionnaire with Likert-scale questions 1-5 to measure satisfaction with product offerings and perception of service quality in Vadodara.

Sampling Techniques: A stratified random sampling strategy would be suitable for this study. Based on their age, occupation, income level, and the kind of financial services they utilize, the respondents are divided into various groups (strata). This approach guarantees that all significant population subgroups are represented, producing more trustworthy and broadly applicable results.

Population: Sample size of 180 people has been taken here from different parts of vadodara, it includes individual with personal accounts, small business owners, consumers who use digital banking services.

Sampling Unit: The distinct components or entities chosen for data collection and analysis in a research project are referred to as sample units. Customers of Vadodara's commercial banks, including both individual and corporate clients who use banking services, make up the sample unit for this study.

Sampling Size: The study's sample size consists of 180 participants who were chosen from different Vadodara commercial banks. Among the responders are: Customers of retail banking: People with current and savings accounts. SME proprietors and corporate clients are examples of business banking customers. Consumers who use online and fintech banking services are known as digital banking users.

Sampling Method: Convenience sampling is the sample technique employed in this study. One kind of non-probability sampling technique is the convenience sample, which is drawn from a group of people who are simple to reach or contact or who are the first respondent who fits the requirements. The inhabitants of Vadodara are the source of the samples or replies used in this study.

4. DATA ANALYSIS & FINDINGS

Methods of Data Analysis and Applicability Several statistical and analytical techniques were used to examine customer satisfaction and perception metrics in commercial banking. These techniques aid in determining the connections between consumer satisfaction levels and banking services.

1. Descriptive analysis Method: Mean computations, percentages, and frequency distributions. Suitability: Offers a broad overview of the satisfaction levels, banking preferences, and demographics of the respondents.
2. The Chi-Square Test Method: Used to ascertain whether satisfaction levels and categorical characteristics, like gender, are related. Suitability: Aids in testing theories on whether or not total satisfaction is greatly influenced by customer perception.

Chi-Square

Test Hypothesis

H_0 (Null Hypothesis): Customers' opinions of commercial banking services and products and their level of satisfaction with the bank as a whole do not significantly correlate.

H_1 (Alternative Hypothesis): Customers' opinions of commercial banking services and products and their level of satisfaction with the bank as a whole are significantly correlated.

Count of 2. Age	Column Labels					
Row Labels	Dissatisfied	Neutral	Satisfied	Very Dissatisfied	Very Satisfied	Grand Total
Female	1	16	36	2	18	73
Male	6	24	46	1	30	107
Grand Total	**7**	**40**	**82**	**3**	**48**	**180**

Observed

Row Labels	Dissatisfied	Neutral	Satisfied	Very Dissatisfied	Very Satisfied	Row Total	
Female	1	16	36	2	18	73	
Male	6	24	46	1	30	107	
Column Total	**7**	**40**	**82**	**3**	**48**	**180**	**Gr nd total**

Expected

Row Labels	Dissatisfied	Neutral	Satisfied	Very Dissatisfied	Very Satisfied
Female	2.838888889	16.2222	33.25556	1.216666667	19.46666667
Male	23.77777778	23.7778	48.74444	1.783333333	28.53333333

(O-E) ^2/E

Row Labels	Dissatisfied	Neutral	Satisfied	Very Dissatisfied	Very Satisfied
Female	1.191139378	0.00304	0.226488	0.5043379	0.110502283
Male	13.29179647	0.00208	0.15452	0.344080997	0.075389408

X-square	**15.90337482**
Df (degree of freedom)	**4**
p-value	**0.003151599**

Here the significance level or p-value is less than 0.05. It shows that H0 is rejected and H1 is accepted in both female and male. Which means that Customers' opinions of commercial banking services and products and their level of satisfaction with the bank as a whole are significantly correlated. This suggest that variation in banking services are influencing customer satisfaction levels rather than occurring by random chance.

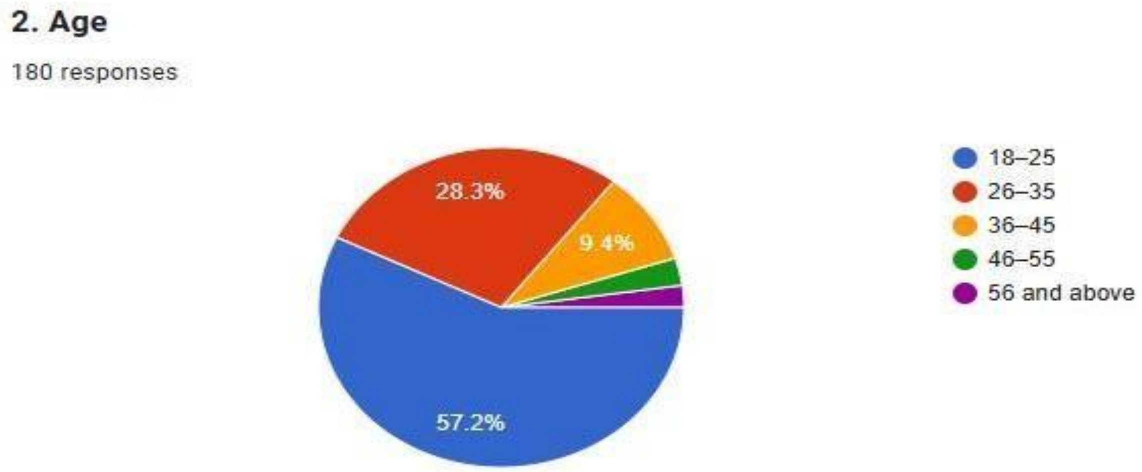
Software Used for Analysis

Excel: Applied for basic statistical calculations, data visualization, and trend analysis.

5. RESULTS AND DISCUSSION

1. Age

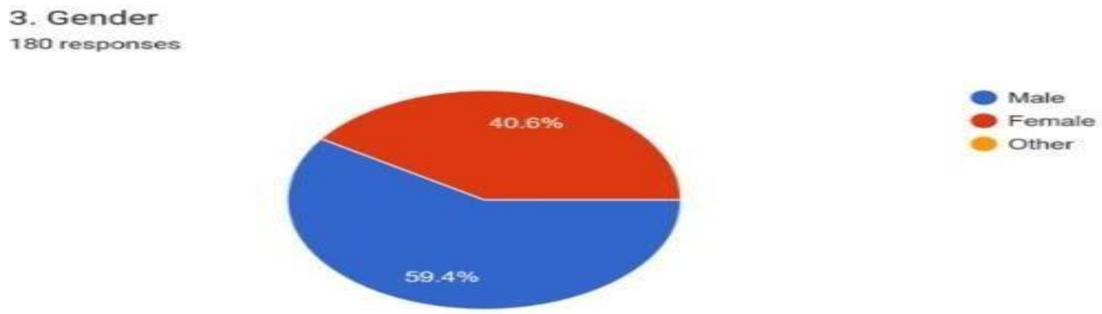
Age group	Percentage	Frequency	Cumulative Frequency
18-25	57.2%	103	103
26-35	28.3%	51	154
36-45	9.4%	17	171
46-55	2.8%	5	176
56 and above	2.2%	3	180



Age Customers between the ages of 18 and 25 make up the bulk of the bank's clientele (57.2%), followed by those between the ages of 26 and 35 (28.3%), suggesting that the clientele is youthful and primarily composed of students and young professionals

2. Gender

Gender	Percentage	Frequency	Cumulative Frequency
Male	59.4%	107	107
Female	40.6%	73	180
Others	0%	0	180

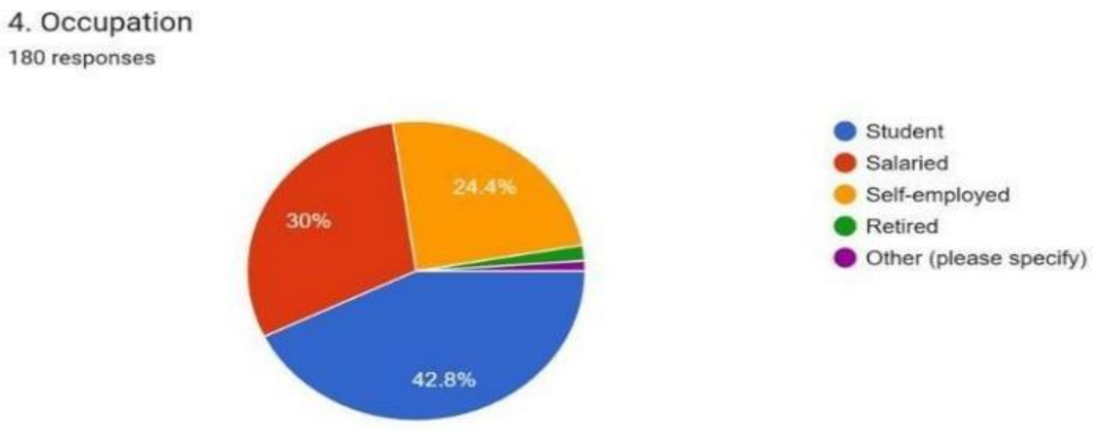


Males make up the bulk of survey respondents (59.4%), while females make up 40.6%. The "Other" category is not represented. This points to a gender disparity that may be brought about by outreach strategies or industry demographics. In order to improve representation, future polls might concentrate on more inclusion.

3. Occupation

Occupation	Percentage	Frequency	Cumulative Frequency
Student	42.8%	77	77
Salaried	30%	54	131
Self-employed	24.4%	44	175
Retired	1.7%	3	178

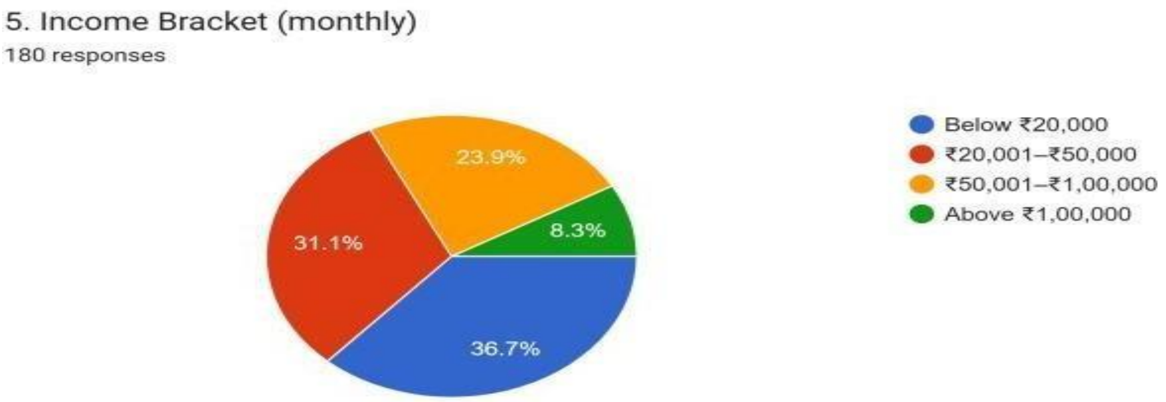
other	1.1%	2	180



According to the report, the largest group is made up of students (42.8%), salaried workers (30%), and independent contractors (24.4%). Only a small portion of those surveyed are retired or in the "Other" group. This points to a varied mix, with a notable presence of working professionals and young students. The information could be used to customize outreach tactics, services, or policies according to occupational demographics.

Income Bracket

Income	Percentage	Frequency	Cumulative Frequency
Below Rs 20,000	36.7%	66	66
Rs20,001-50,000	31.1%	56	122
Rs50,001-100,000	23.9%	43	165
Above Rs100,000	8.3%	15	180

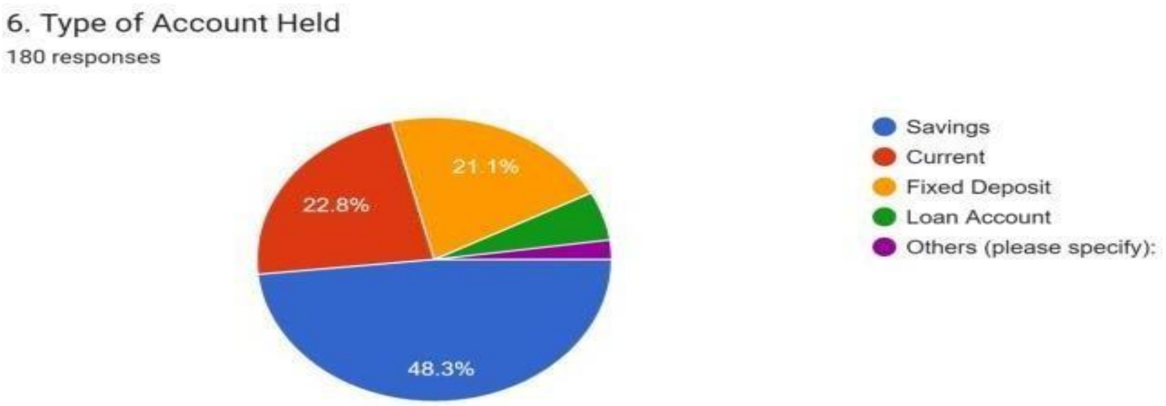


With 36.7% of consumers earning less than ₹20,000 and 31.1% earning between ₹20,001 and ₹50,000, the majority of customers are in the low to middle income level. A

smaller high-income category is indicated by the fact that just 8.3% of people make more than ₹1,00,000.

Type of Account Hold

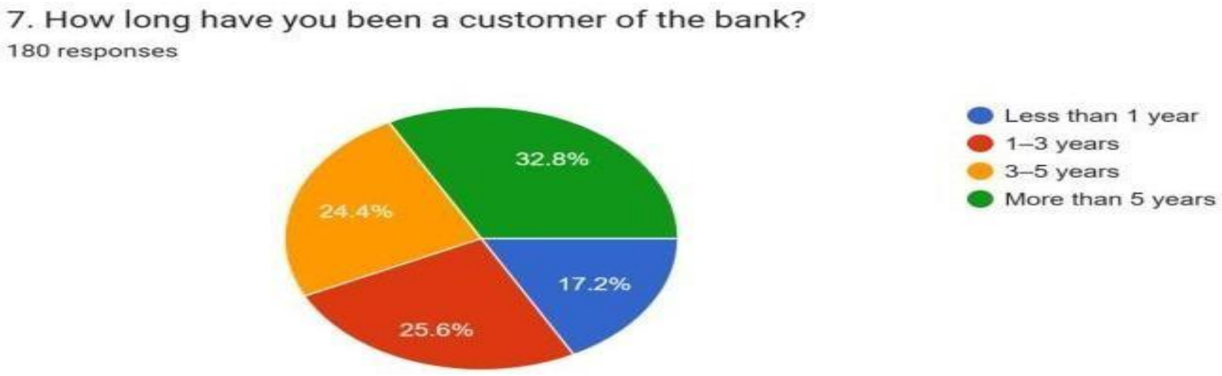
Type of Account Held	Percentage	Frequency	Cumulative Frequency
Savings	48.3%	87	87
Current	22.8%	41	128
Fixed deposit	21.1%	38	166
Loan account	5.6%	10	176
others	2.2%	4	180



Students and salaried workers hold the majority of accounts, with savings accounts accounting for 48.3% of all accounts. The majority of current accounts (22.8%) are used by enterprises an independent contractor. While loan accounts (5.6%) have a smaller user base, suggesting either a lower demand for loans or strict eligibility rules, fixed deposits (21.1%) indicate that many clients are interested in safe investments.

Duration as a customer	Percentage	Frequency	Cumulative Frequency
Less than 1 year	17.2%	31	31
1-3 years	25.6%	46	77
3-5 years	24.4%	44	121
More than 5 years	32.8%	59	180

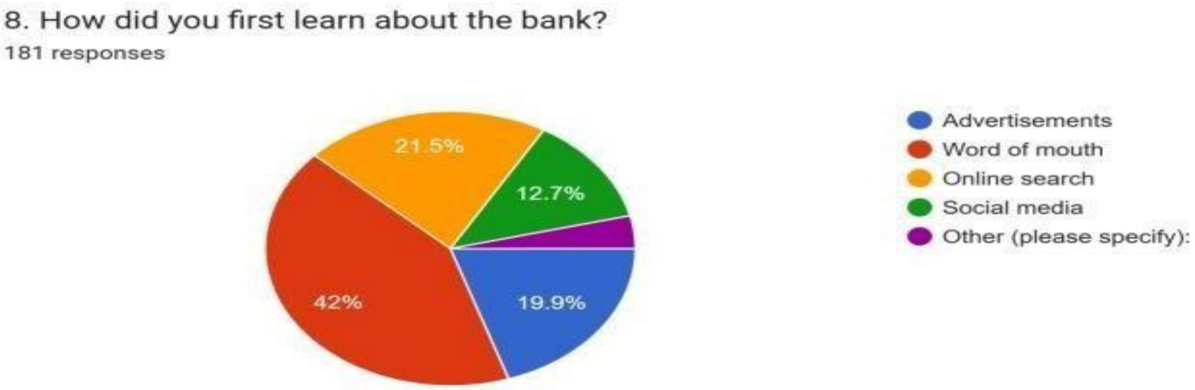
How long have you been a customer of the bank



High customer retention is demonstrated by the impressive 32.8% of clients who have been with the bank for more than five years. Nonetheless, 17.2% of the customers are new (less than a year), indicating that the bank is actively seeking out new consumers. There is a balanced distribution of both new and returning customers, with 25.6% having been with the bank for one to three years and 24.4% for three to five years.

4. **How do you first learn about the bank?**

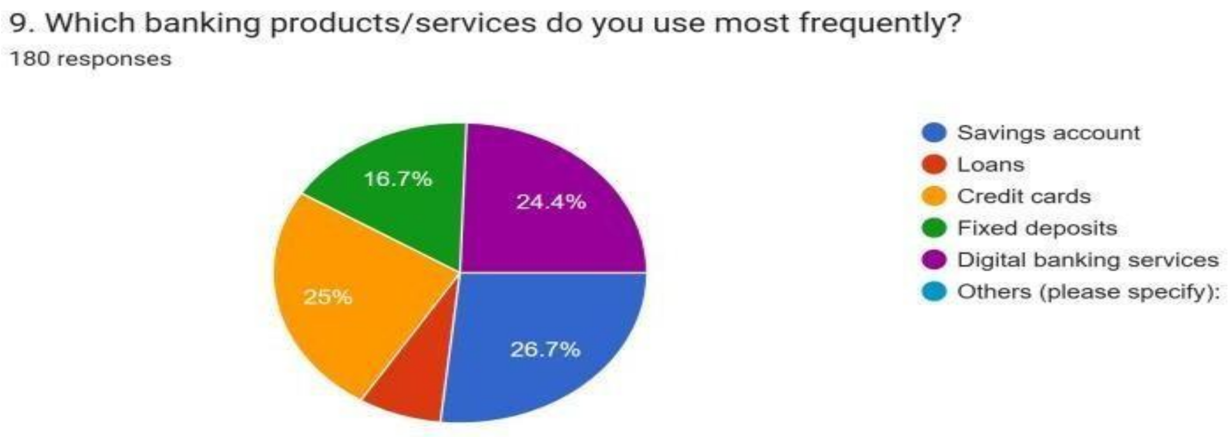
Option	**Percentage**	**Frequency**	**Cumulative Frequency**
Advertisement	19.9%	36	36
Word of mouth	42%	76	112
Online search	21.5%	39	151
Social media	12.7%	23	174
others	4%	7	181



Word-of-mouth was the primary source of information for the majority of customers (42.2%), underscoring the significance of customer referrals in attracting new customers. Advertisements (20%) and internet searches (21.7%) are also important, although social media (12.2%) has a lesser impact. This implies that in order to draw in new clients, the bank should improve its digital marketing initiatives.

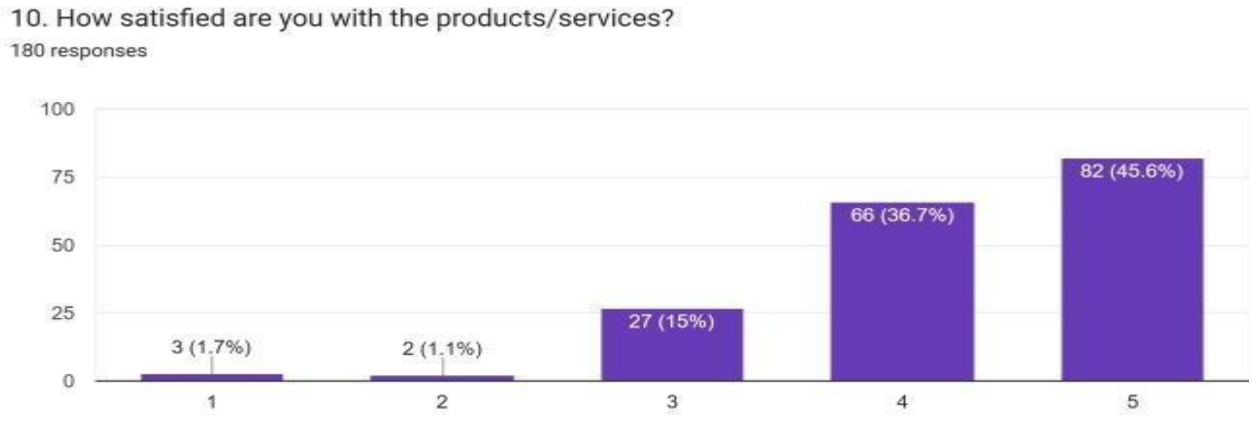
5. Which banking products/services do you use most frequently?

Banking products/services	Percentage	Frequency	Cumulative Frequency
Saving account	27.1%	49	49
Loans	24.3%	44	93
Credit cards	16.6%	30	123
Fixed deposits	24.9%	45	168
Digital banking services	27.1%	49	217
others	20%	36	253



Savings accounts (26.7%), credit cards (25%), and digital banking (24.4%) are the most frequently utilized banking services, indicating a high preference for online and personal banking services. While loans (7.2%) are used less frequently, which may reflect either low loan demand or stringent qualifying conditions, fixed deposits (16.7%) show moderate investing activity.

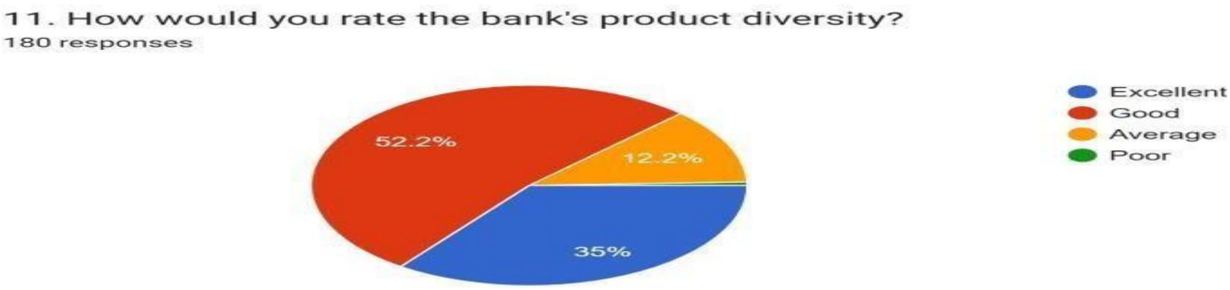
6. How satisfied are you with the products/services?



The poll shows that the majority of consumers have a generally favorable opinion of the bank's goods and services, even when precise satisfaction ratings are not given. It can be deduced that credit cards, savings accounts, and online banking services are well-received since other responses indicate high levels of client satisfaction.

7. How would you rate the bank's product diversity?

Rating	percentage	Frequency	Cumulative Frequency
Excellent	**34.8%**	**63**	**63**
Good	**52.5%**	**95**	**158**
Average	**12.2%**	**22**	**180**
Poor	**0.5%**	**1**	**181**

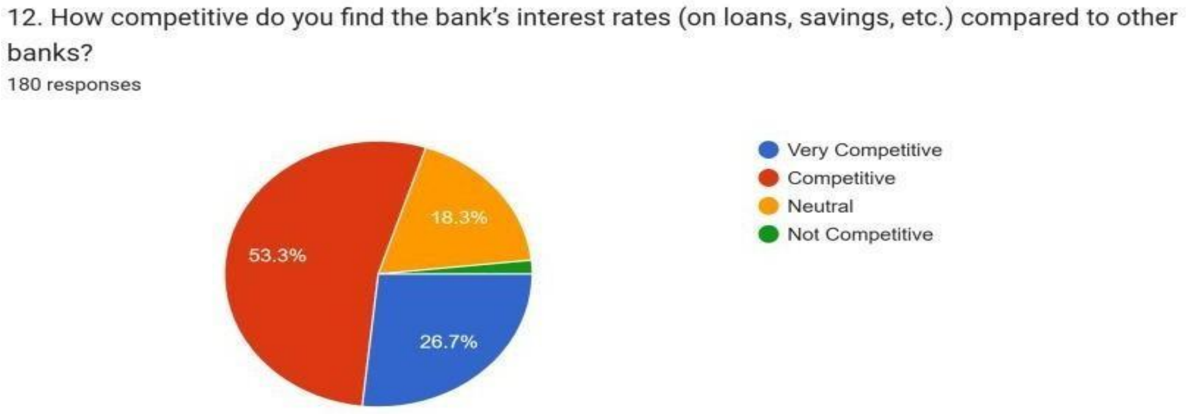


The bank provides a broad range of financial services that satisfy client needs, as seen by the noteworthy 87.2% of clients who rank the product diversity as excellent (35%) or good (52.2%). Minimal discontent is indicated by the 0.6% who evaluate it as poor.

8. How competitive do you find the bank's interest rate compared to the other banks?

Competitiveness rating	percentage	frequency	Cumulative frequency
Very competitive	26.7%	48	48
competitive	53.3%	96	144

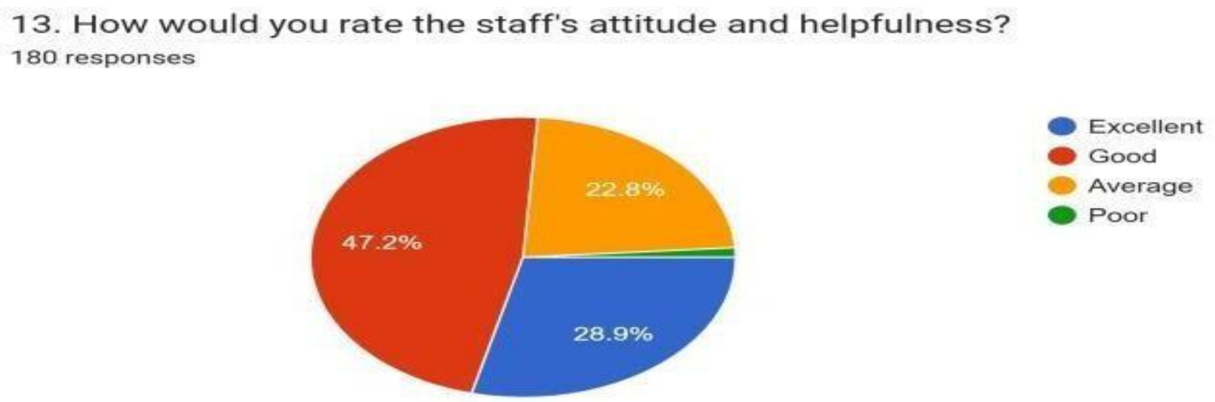
neutral	18.3%	33	177
Not competitive	1.7%	3	180



The bank offers good rates for loans and savings, as seen by the robust 80% of clients who view its interest rates to be competitive or extremely competitive. The majority of customers do not care much about pricing, since only 1.7% believe they are not competitive.

9. How would you rate the staff's attitude and helpfulness?

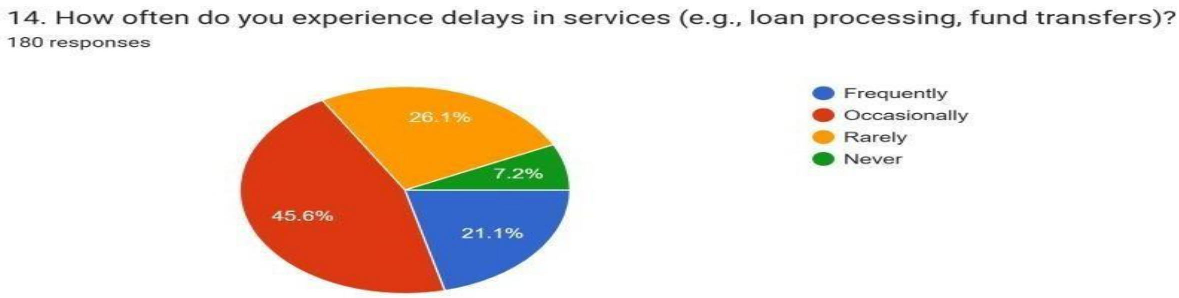
Rating	**Percentage**	**Frequency**	**Cumulative frequency**
Excellent	28.9%	9	9
Good	47.2%	14	23
Average	22.8%	7	30
Poor	1.1%	0	30



The majority of clients think well of the bank's customer service; 76.1% of them rate the attitude of the employees as excellent (28.9%) or good (47.2%). There is space for improvement in employee training and customer interactions, though, since 22.8% assess it as average and 1.1% as poor.

10. How often do you experience delays in services?

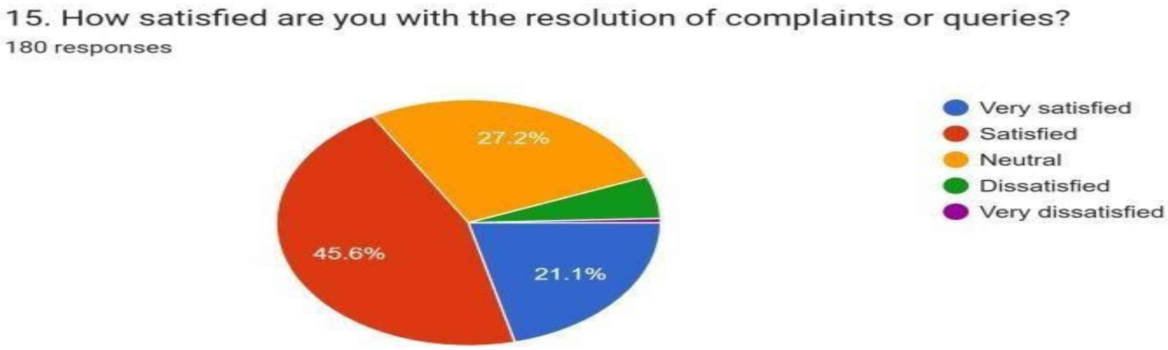
Delay experience	**Percentage**	**Frequency**	**Cumulative Frequency**
Frequently	**21.1%**	**38**	**38**
occasionally	**45.6%**	**82**	**120**
rarely	**26.1%**	**47**	**167**
never	**7.2%**	**13**	**180**



The bank is concerned about the 21.1% of consumers who regularly encounter delays in services like financial transfers and loan processing. However, 26.1% of consumers rarely have problems, and 45.6% occasionally experience delays, indicating that while delays do occur, not all customers are impacted. 7.2% of customers never experience delays, indicating that while service efficiency is respectable, it might be further enhanced.

11. How satisfied are you with the resolution of complaints or queries?

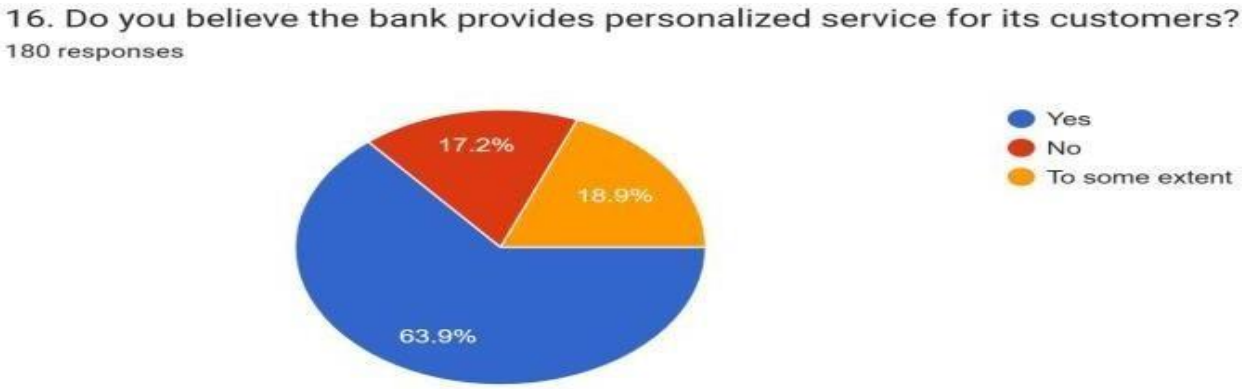
Satisfaction level	**percentage**	**frequency**	**Cumulative frequency**
Very satisfied	21.1%	38	38
Satisfied	45.6%	82	120
Neutral	27.2%	49	169
Dissatisfied	3.1%	6	175
Very dissatisfied	3.0%	5	180



66.7% of consumers are satisfied or extremely satisfied with the bank's handling of their complaints and inquiries, while 27.2% are neutral. The majority of concerns are successfully resolved, as indicated by the low percentage of unsatisfied customers (6.2%), although response time and resolution quality might be enhanced.

12. Do you believe banks provides personalized services for its customers ?

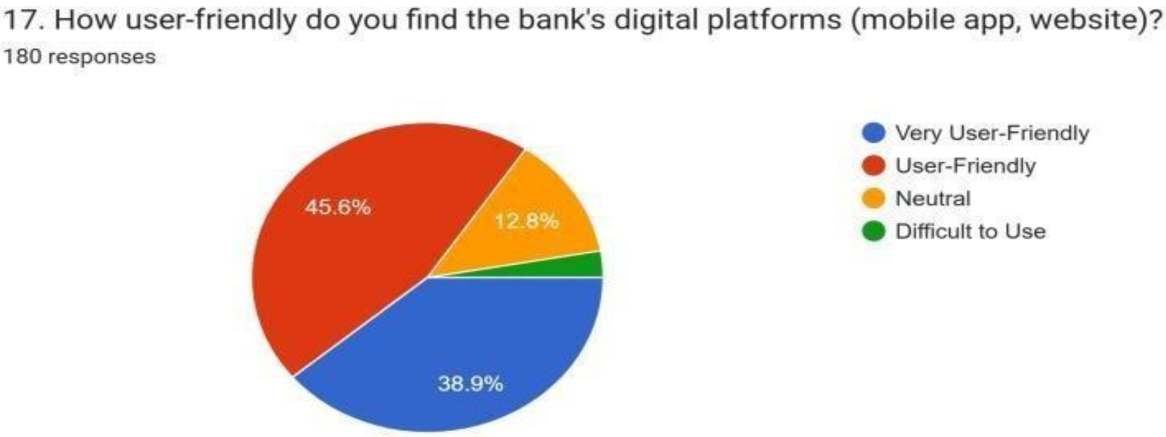
Personalized service belief	**percentage**	**frequency**	**Cumulative frequency**
yes	63.9%	115	115
no	17.2%	31	146
To some extent	18.8%	34	180



The majority (63.9%) think the bank offers individualized services, compared to 18.9% who think it just partially does so and 17.2% who think it doesn't offer any personalized services at all. This implies that even if the bank has worked to improve client interactions, more can be done.

13. How user-friendly do you find the bank's digital platforms?

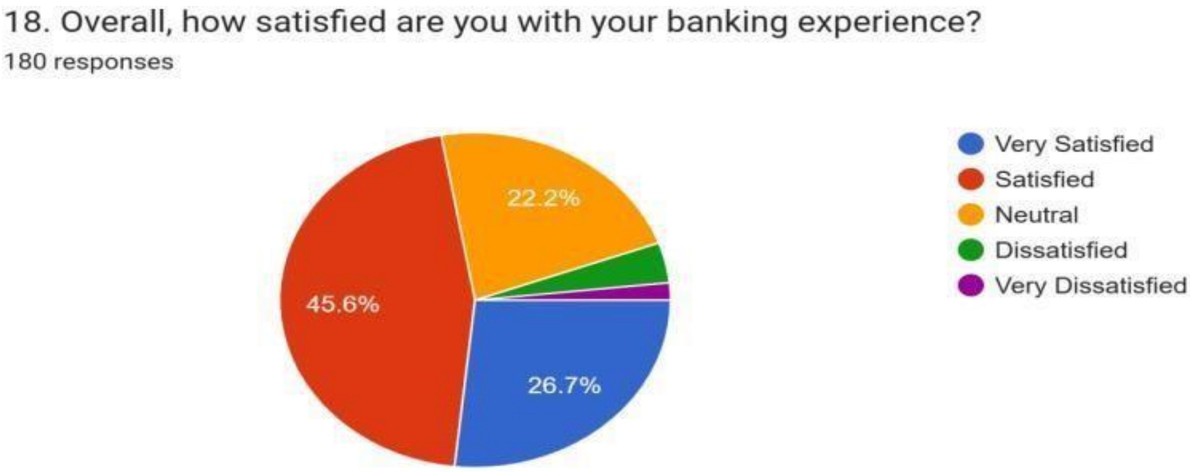
User-friendliness rating	**Percentage**	**frequency**	**Cumulative frequency**
Very user-friendly	**38.9%**	**70**	**70**
User friendly	**45.6%**	**82**	**152**
neutral	**12.8%**	**23**	**175**
Difficult to use	**2.7%**	**5**	**180**



According to 84.5% of consumers, the bank's digital platforms are easy to use, with 38.9% rating them as extremely user-friendly and 45.6% rating them as user-friendly. Nevertheless, 2.8% find them tough to use, and 12.8% are neutral, suggesting that a tiny percentage of users may find the platform's interface challenging.

14. Overall, how satisfied are you with your banking experience?

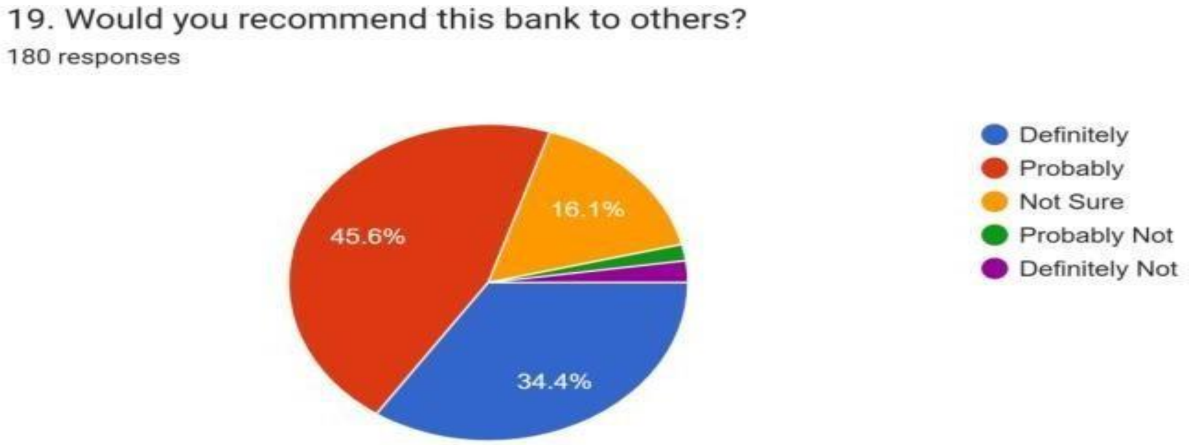
Satisfaction level	percentage	frequency	Cumulative frequency
Very satisfied	26.7%	48	48
satisfied	45.6%	82	130
Neutral	22.2%	40	170
dissatisfied	2.8%	5	175
Very dissatisfied	2.7%	5	180



Strong customer retention and high-quality service are indicated by the 72.3% of consumers who are pleased or extremely satisfied with their whole banking experience. Even if the majority of customers are satisfied, there is still room for improvement, as evidenced by the 22.2% who are neutral and the 5.6% who are unsatisfied.

15. Would you recommend this banks to others?

Recommendation level	percentage	frequency	Cumulative frequency
Definitely	34.4%	62	62
Probably	45.6%	82	144
Not sure	16.1%	29	173
Probably not	2.0%	4	177
Definitely not	1.9%	3	180



Positive customer experiences and trust in the bank are demonstrated by the impressive 79.8% of customers who said they would recommend the bank to others ("Definitely" or "Probably"). Nonetheless, 3.9% would not recommend the bank, and 16.1% are unsure, suggesting that a small portion of clients have misgivings about its offerings.

Findings

1. Young Clientele: With 85.5% of its clients being between the ages of 18 and 35, the bank's main clientele consists of students and professionals just starting their careers.
2. Male Majority: Although women (40.6%) still make up a sizable fraction, men make up a slightly greater share (59.4%).
3. Low to Middle-Income Dominance: Just 8.3% of customers are in the high-income group, with the majority earning less than ₹50,000.
4. The Most Popular Savings Accounts: The majority of consumers (48.3%) have savings accounts, which is consistent with the demographics of paid workers and students.
5. High Customer Retention: 17.2% of customers are new, suggesting active client acquisition, while 32.8% of consumers have been banked for more than five years, demonstrating excellent loyalty.
6. Word of Mouth is the Primary Source of Awareness: recommendations accounted for 42.2% of the bank's customer acquisition, highlighting the significance of customer trust.
7. Preference for Digital Banking: While 84.5% of consumers find the bank's digital platforms easy to use, 2.8% find them difficult.
8. Competitive Interest Rates: Since 80% of consumers find interest rates appealing, cost is not a significant concern.
9. Customer service is generally positive: 76.1% of respondents think that staff members' attitudes are good or exceptional, while 22.8% think that they are average, which suggests that they need more training.
10. There Are Service Delays: 21.1% of consumers report regular delays, particularly with loans and money transfers, which suggests that procedures need to be improved.

Limitation Of the Study

1. Limited Demographic Representation: The study may have overlooked the banking requirements of older age groups due to its heavy emphasis on youthful consumers (18–35 years old).
2. Income Bias: The survey might not accurately reflect the preferences of high-income people because the majority of respondents are from the low-to-middle income range.

3. Absence of Geographic or Regional Insights: The study makes no mention of whether consumer behaviour differs in urban, rural, or regional contexts.
4. Limited Sample Size Information: The representativeness of the results is still unknown in the absence of information on the sample size and selection procedure.
5. Lack of a Comprehensive Analysis of Dissatisfaction: Although the survey does not examine the precise causes of consumer dissatisfaction, some unhappiness is observed in areas such as service delays and complaint response.
6. Lack of Comparative Benchmarking: It is unknown how the bank stacks up in the industry because the study does not compare its performance to that of its rivals.
7. Service Delays Not Thoroughly Investigated: Although delays are seen, it is not thoroughly examined if they are brought on by a lack of employees, ineffective procedures, or technical problems.

Personal biases

1. Selection Bias: Because the study employs convenience sampling, young respondents (57.2% of the sample are between the ages of 18 and 25) are over-represented.
2. Confirmation Bias: The study minimises bad encounters while emphasising the good features of banking services.
3. Digital Bias: If digital banking is given too much attention, traditional banking clients' viewpoints may be ignored.
4. Perception of Brands Bias: Some banks receive positive reviews, perhaps as a result of subjective opinions rather than strictly factual information.
5. Interpretation Bias: Although the Chi-Square test verifies correlations, it cannot prove causation.
6. Limited Customer Segmentation: Results on customer satisfaction may be skewed if older, rural, or lower- income clients are not given enough attention.

6. CONCLUSION

This study offers insightful information about the bank's clientele, inclinations, and general satisfaction levels. The results show that most clients are young (18–35 years old), mostly students and professionals in their early careers, with a sizable but male-dominated female population. The majority of clients are in the low-to-middle income range, which affects their inclination for digital banking services and savings accounts.

A significant percentage of the bank's clients have been with them for more than five years, demonstrating its outstanding customer retention rate. The main source of awareness is still word-of-mouth, which suggests a solid reputation and level of trust among current clients. Although some customers find the bank's digital banking services difficult to use, they are generally well- received.

While overall customer satisfaction is good, service delays—especially in loan processing and bank transfers—remain an issue. Good customer service, a wide range of products, and competitive interest rates all add to a satisfying banking experience. Staff interactions, the effectiveness of complaint resolution, and service personalization, however, could all use some work.

It is clear that there is a high level of client loyalty and trust because about 80% of consumers are eager to recommend the bank. But by resolving service delays, enhancing loan accessibility, utilizing digital marketing, and customizing banking experiences to meet the various needs of its clientele, the bank can further improve its offerings. By making these sectors stronger, the bank will be able to draw in more clients and keep its competitive edge.

Suggestion

1. Extend Demographic Coverage: Incorporate a wider variety of ages to comprehend banking preferences among many generations, including middle-aged and elderly clients.
2. Customization of Income-Based Services: The bank should create customized financial products, like microloans, flexible savings plans, and options for novice investors, considering the percentage of low-to- middle-income clients.

3. Improve Digital Banking Usability: By enhancing the user interface, including tutorials, and providing improved customer assistance for online services, you may address the issues that consumers encounter when attempting to use digital banking.
4. Increase Loan Accessibility: The bank should determine whether stringent eligibility requirements, exorbitant interest rates, or a lack of knowledge are the main obstacles to loan adoption, and modify its loan offerings accordingly.
5. Minimize Service Delays: To cut down on delays in loan approvals and fund transfers, automate processes and improve personnel techniques.

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A Comparative Study of Top Five Cryptocurrencies in India.

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ABSTRACT

The present research examines the most prominent five cryptocurrencies—Bitcoin, Ethereum, Biance Coin, Tether, and Solana—that are accessible in India according on the value of their market caps. It additionally highlights the benefits and drawbacks of each type of cryptocurrency as well as the advantages of some over alternatives. The article additionally outlines important aspects of the prominent digital currencies that are accessible in India. The study also concentrates on price assessment of the top five cryptocurrencies during the last year (1 years) as well as this study also indicate the contrasting of prices volatility of cryptocurrencies.

KEYWORDS: Cryptocurrencies, Market Capitalization, Key feature, Price Analysis

1. INTRODUCTION

Cryptocurrency is a form of electronic money created using technology that controls its creation and facilitates transactions while concealing the user's identity. The term "crypto" refers to encryption, and cryptography is a computer technology used for security, information hiding, and identification. Money simply represents the amount needed for transactions. Cryptocurrencies are digital currencies that offer faster, cheaper, and more reliable transactions compared to government-issued currencies. They allow direct transactions between users without intermediaries, making transactions affordable and fast.

To prevent fraud and manipulation, each cryptocurrency user can simultaneously record and verify their transactions with others on a public ledger called a blockchain. This ledger is publicly available, ensuring efficient, sustainable, secure, and transparent transactions. Cryptocurrencies operate using blockchain technology, which enables their existence. Bitcoin, the most famous cryptocurrency, was created using blockchain technology. Blockchain is a decentralized ledger of all transactions on a peer-to-peer network, allowing participants to confirm transactions without the need for a central clearinghouse.

Blockchain technology offers advantages such as increased transparency, accurate tracking, a permanent ledger, and reduced costs. However, it also has disadvantages, including complex technology, legal implications, implementation challenges, and competition from other platforms. Despite these drawbacks, blockchain technology continues to evolve and has the potential to revolutionize industries by enabling secure, transparent, and efficient transactions and operations.

2. REVIEW OF LITERATURE

(Malik, 2020) had conducted research on "Drivers of Bit coin Prices: An Empirical Analysis of India" with an objective of evaluating the price of Bit coin in India during 156 weeks starting from 2017- to 2019 through Vector Error Correction. At the end researcher concluded that Bit coin price is affected by Bit coin supply, gold prices, money supply, and Bit coin trade volume. (Ayub & Abrar, 2020) had carried out "A Comparative Study on Top Five Digital Currencies in India: Crypto currencies' '. Here in this research researcher comparatively examined five crypto currencies: Bit coin, Ethereum, Ripple, Tether and Bit coin Cash which were selected based on the market capitalization rate. Research period is six months from October 2019 to March 2020. The result concluded by the researcher that the decline in price of crypto currencies in March 2020 due to the world Pandemic Covid-19. (Bhosale & Mavale, 2018) had analysed "Volatility of select Crypto-currencies: A comparison of Bit coin, Ethereum and Lit coin". The researcher tried to compare the price of three crypto currencies - Bitcoin, Ethereum and Lit coin from December 2017 and January 2018 using Graph and Descriptive statistics. Research concluded that Bit coin was much steadier than other two coins during the selected period. (Kaur & Kaur, 2018) had done "A Comparative Study of Bit coin and Other Crypto currencies". Researchers compared Bit coin Vs Lit coin, Ethereum, Ripple and Dash considering some factors like Usage, YTD Performance, Total Supply, Public Awareness, Community and Rank according to market capitalization and overall result obtained showed that Bit coin is performing well in all aspects as Compared to others. (Blesson & Manjari, 2018) had written an article entitled "Crypto- currency: An Overview on Its Impact on Indian Economy". The researcher empathized on studying about crypto- currency and how it affects the Indian economy furthermore researcher also described the present state of affairs and future projections of crypto currencies in India. (V & P, 2019) conducted "A Study on Opportunities and Challenges of Crypto- currency in India with Special Reference to Bit coin". It was a conceptual article discussing history, types, its working, advantages and disadvantages, challenges and opportunities. Moreover, researchers tried to scrutinize Bit coin in India.

3. METHODOLOGY

The present study focuses on descriptive research and is based on secondary data collected from reports in Economic Times, CoinGecko, CryptoList.com, Money Control and other research papers as well as websites their respective websites. Cryptocurrency information has been selected based on available data over the past 8 years to analyse the returns of different cryptocurrencies. This method of selecting crypto information is called convenience sampling, where data is selected based on the convenience of the researcher.

Objective of the study

- To analyse the attributes of the five leading cryptocurrencies chosen based on their market capitalization.
- To conduct a comparative price analysis of the top five cryptocurrencies over the past year (For 1 Year).

History and Features of top five cryptocurrencies

Bitcoin: Bitcoin's rise over the past year has been a major financial story. Bitcoin, the first cryptocurrency to be established, was designed to transform peer-to-peer transactions. Although Bitcoin has a reputation for innovation, previous efforts such as B-money and Bit gold to create crypto-secured online currencies have not been fully realized. In 2008, an article titled "Bitcoin: Peer-to-Peer Electronic Cash System" was published on cryptocurrency forums. Then, in 2009, the Bitcoin software was released to the public, starting the mining process responsible for creating new Bitcoins and validating transactions on the blockchain. Initially, Bitcoin had no market value as it was only mined, which posed a problem in assigning monetary value to this emerging unit of cryptocurrency. Bitcoin's journey from conceptualization to becoming a widely traded digital asset highlights the cryptocurrency's growth and impact on the financial landscape.

Key Features of Bitcoin:

Blockchain Technology: Transactions are documented on the blockchain, which is a publicly accessible record that offers confidentiality and visibility.

Mining: In order to verify transactions and safeguard the network, powerful machines must solve intricate mathematical puzzles in order to produce new bitcoins.

Security: The independent network of miners that maintains Bitcoin's blockchain makes it impervious to counterfeiting and intimidation.

Ethereum: After Vitalik Buterin presented the idea to the Bitcoin community in 2013, the Ethereum white paper outlining the protocol's fundamental technical framework was published.

Buterin is driven by his conviction believes the issue is not being sufficiently addressed by the Bitcoin community. Ethereum's primary objective is to use blockchain technology to do away with the need for middlemen in a number of procedures, including archiving information, mortgage transfers, and the monitoring of intricate financial instruments. Intelligent contracts, which are self-executing scripts that enable value exchange on the network, are a key component of Ethereum. for as long as the Ethereum network is operational, these contracts will continue to function since they are permanently stored on the blockchain and will execute continuously under present circumstances without external intervention.

That virtual machine illustrates the versatility of the infrastructure and the potential it has for many applications within the system decentralized ecosystem by enabling the deployment of any program on the Ethereum blockchain, independent of the programming language employed.

Key Features of Ethereum:

Ether (ETH): Ethereum's cryptocurrency, used to pay for computational resources and transactions. Smart Contracts: Ethereum allows the creation and deployment of smart contracts, enabling self-executing contracts with the terms of the agreement directly written into code.

Ethereum Virtual Machine (EVM): It is a runtime environment for smart contracts in Ethereum. It provides the necessary resources to execute smart contracts. Decentralized Applications (DApps): Ethereum enables the creation of decentralized applications, allowing participants to interact without a central authority.

Binance Coin: The cryptocurrency known as Binance Coin (BNB) has been released by the trading platform Binance and is denoted by the sign BNB. The native currency of Binance's Binance Chain, BNB was initially built on the Ethereum network. It covers listing costs, trading and exchange fees, and various additional fees on the Binance platform, among other things. BNB may also be traded for various other digital currencies and used to invest in certain first-time coin offerings. The restricted quantity of Binance Coin is one of its unique features; a percentage of Binance's revenues are used to buy back and destroy BNB permanently, which lowers the total supply.

Originally created in 2017 as a utility token to lower transaction fees, BNB's use has grown to encompass a wide range of applications, including as web-based services, banking services, make trips booking, entertainment, including payment of fees for transactions on the Binance Chain. With a market valuation of more than 36 billion USD as of November 2023, Binance Coin ranks among the biggest digital currencies globally. BNB is already a major participant in the cryptocurrency world, closely ranking Bitcoin, Ethereum, and USD Tether when it comes to of market value thanks to its adaptability and broad acceptance.

Key Features of Binance Coin:

Fee Payment: At the Binance exchange, BNB is mostly utilized to cover transaction charges. Token Burns: Binance decreases the total quantity of BNB and may raise its value by using a piece of its earnings to buy it back and eliminate it forever.

Broad Range of Uses: BNB is now used for a variety of purposes, including as internet services, financial services, recreational activities, travel reservations, and processing fees for transactions on the Binance Chain.

Market size and Trading: BNB comprised one of the biggest cryptocurrencies by market capitalization as of November 2023, with an aggregate market size of more than $36 billion.

Backing as an Ecosystem: BNB is the digital currencies that runs the Binance Chain ecosystem as a whole. It may be spent on a number of things, including paying Binance Smart Chain transaction fees, taking part in token sales, receiving awards, and beyond.

The Tether USDT: Tether (USDT) is a secure crypto that has been protected by Tether's dollar reserve funds, which provide sustainability. It was introduced in 2014 and issued by iFinex-owned Tether. As of March 2024, USDT has a market valuation of around $99 billion, making it the world's biggest stablecoin and the third- largest coinage. The bulk of the 4,444 Tether tokens, which are tied to US dollars, are linked to precious metals and other conventional currencies. Although Tether's reserves disclosure and auditing procedures have generated criticism, the stable currency market still uses it extensively. With tokens being created or melted in response to consumer demand, it is intended to preserve a constant 1:1 conversion rate with the US dollars. regardless of whether it doesn't provide revenues, Tether offers a reliable means of storing assets and becomes available on several blockchains. About 80% of all transactions involving Bitcoin are made through Tether, which plays a crucial role in supplying liquidity to the market for digital currencies.

Key Features of Tether:

Currency Stabilization: The tokens used for Tether have a steady and readily apparent value since they are carefully correlated with major official currencies like the EUR and the US dollar. Because of the stability it provides, Tether is a great option for investing and a reliable repository of money.

Accessibility and Availability: For crypto buyers and sellers, Tether is a trustworthy supply of liquidity that makes it possible to move in and out of different digital currency investments with ease and without being exposed to unforeseen profits or losses. Additionally, it offers a low-volatility way to effectively unwind market holdings.

Supported by Reserves: The company's reserves of conventional currency function as a systematic 1:1 backing for each Tether (USDT).

International Network and Adoption: Due to Tether tokens' integration into several blockchain systems, they are widely used and have unmatched liquidity. This worldwide presence improves accessibility and ease of use for users in various geographical locations. Developed in 2017, Solana is a third-generation publicly available blockchain technology designed to offer a strong basis for extensible and autonomous applications. Solana, which is renowned for its superior efficiency, seeks to address the problems with scalability using blockchain-based technologies. In comparison with other alternatives like Ethereum, it is notable for its low transaction expenses as well as rapid transaction productivity, which can execute beyond 65,000 transactions per second.

Key Features of Solana:

Strong Transmission rate: It is arguably of the most rapidly networks for blockchain because to its special consensus process, and additional cutting-edge technology.

reasonably priced Transaction Costs: In contrast with various other blockchain architectures, Solana's topology enables affordable transaction charges.

Evidence of History (PoH): Whenever transactions are uploaded to the the blockchain system, Solana uses the concept of the Proof of History agreement process for organizing them.

Proof-of-Stake (PoS) procedure: To protect the network's integrity and authenticate operations Solana applies a Proof-of-Stake method.

Designers may create and run decentralized application programs (DApps) on Solana owing to its ability to enable intelligent contract generation and implementation. Its blockchain's capacity for application possibilities are increased by this attribute.

4. DATA ANALYSIS & FINDINGS

A Comparative Analysis of Cryptocurrencies

The world of cryptocurrencies is constantly changing due to new developments. Bitcoin, Ethereum, Binance Coin, Solana, and Tether are notable participants in this dynamic landscape that draw interest from both investors and fans. The most well-known and recognized digital money is still Bitcoin, the forerunner in the cryptocurrency space. With its cutting-edge smart contract features, Ethereum, a strong competitor, seriously challenges Bitcoin's dominance. Since its October 2014 launch and subsequent rebranding, Tether has established itself as a stablecoin. During July 2017, Binance Coin made its debut with a novel product that combined the benefits of Bitcoin with lower transaction prices and quicker transaction speeds. Each cryptocurrency in this carefully chosen collection has unique characteristics, but they all have one thing in common: a tendency to fluctuate in value. Prominent industry leaders keep going to influence the direction of the digital currency environment as the crypto family grows and diversifies, each adding unique advantages and traits to the developing story of decentralized banking. Despite their differences, all cryptocurrencies have one thing in common: their volatile pricing. An overview of the cryptocurrency price fluctuations during a one-year period, from February to January 2024, is shown in the table below.

Table 1: Bitcoin's price fluctuation of bitcoin during January 2023 to January 2024

Months	Bitcoin
Feb 2023	₹19,98,288.705
Mar 2023	₹23,35,069.134
Apr 2023	₹24,91,877.483
May 2023	₹24,13,231.903
Jun 2023	₹25,04,977.227
Jul 2023	₹25,77,007.007
Aug 2023	₹24,50,316.894
Sep 2023	₹22,41,311.82
Oct 2023	₹28,83,649.993
Nov 2023	₹31,42,999.112
Dec 2023	₹ 36,96,519.000

Jan 2024	₹40,49,999.000

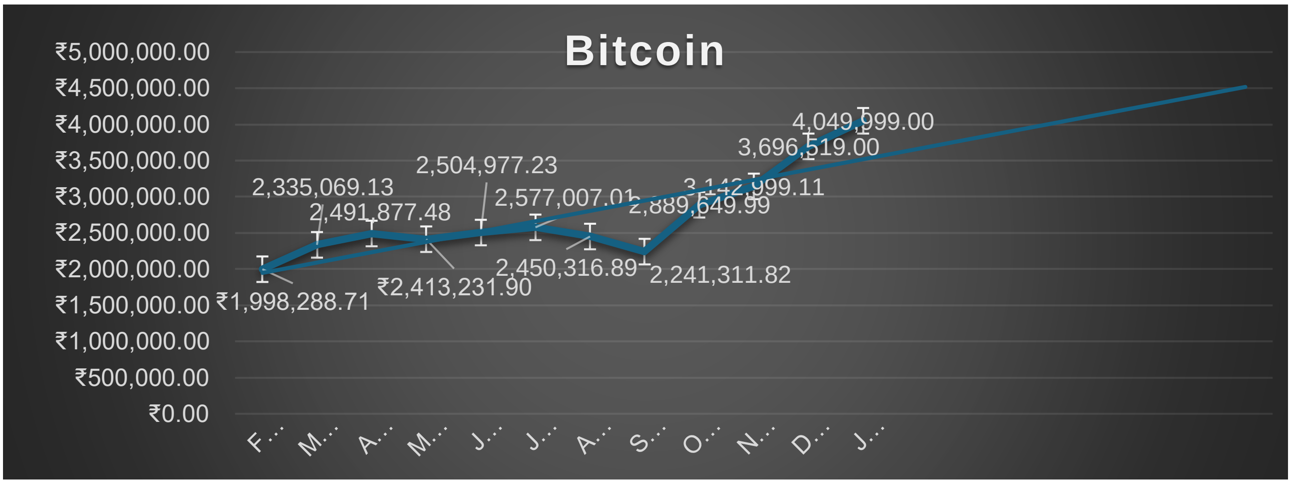

Table 2: Ethereum's price fluctuations of bitcoin during January 2023 to January 2024.

Months	Ethereum
Feb 2023	₹14,649.404
Mar 2023	₹14,9567.728
Apr 2023	₹172952.479
May 2023	₹162889.069
Jun 2023	₹156991.662
Jul 2023	₹164027.747
Aug 2023	₹142358.149
Sep 2023	₹137110.006
Oct 2023	₹150953.793
Nov 2023	17646.243
Dec 2023	₹197904.006
Jan 2024	₹217649.016

Figure 2: Price Fluctuation in Ethereum during February 2023 to January 2024

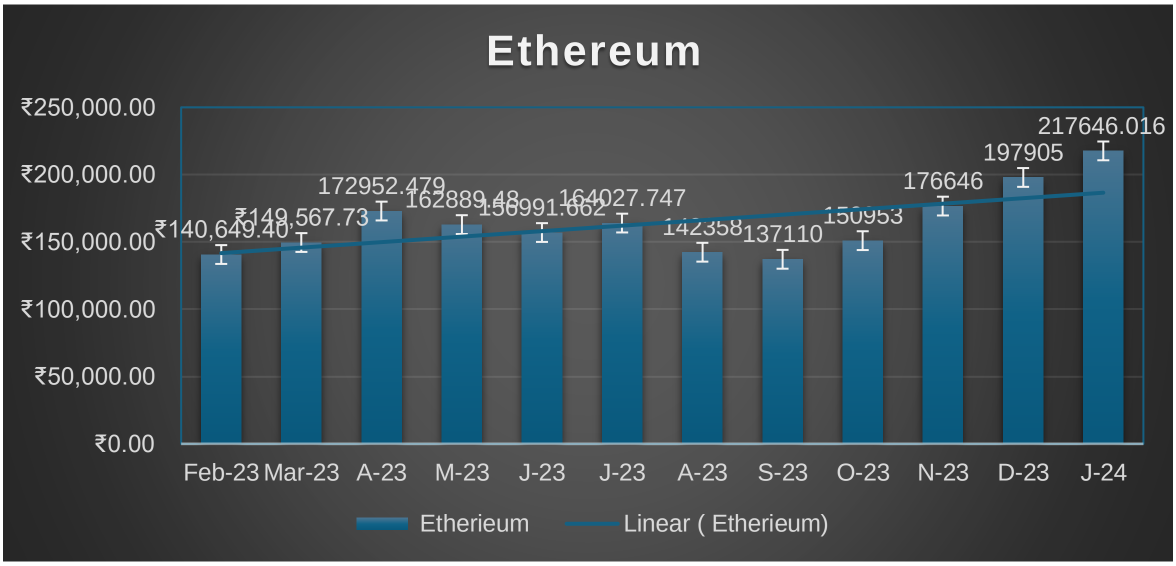

Table3: Binance Coin's Price Fluctuation of Bitcoin during January 2023 to January 2024.

Months	Binance Coin
Feb 2023	₹2759.71
Mar 2023	₹2818.833
Apr 2023	₹28498.849
May 2023	₹26847.41
Jun 2023	₹25314.325
Jul 2023	₹20942.52
Aug 2023	₹20034.352
Sep 2023	₹18508.417
Oct 2023	₹18951.57
Nov 2023	21193.056
Dec 2023	₹26939.608
Jan 2024	₹26846.706

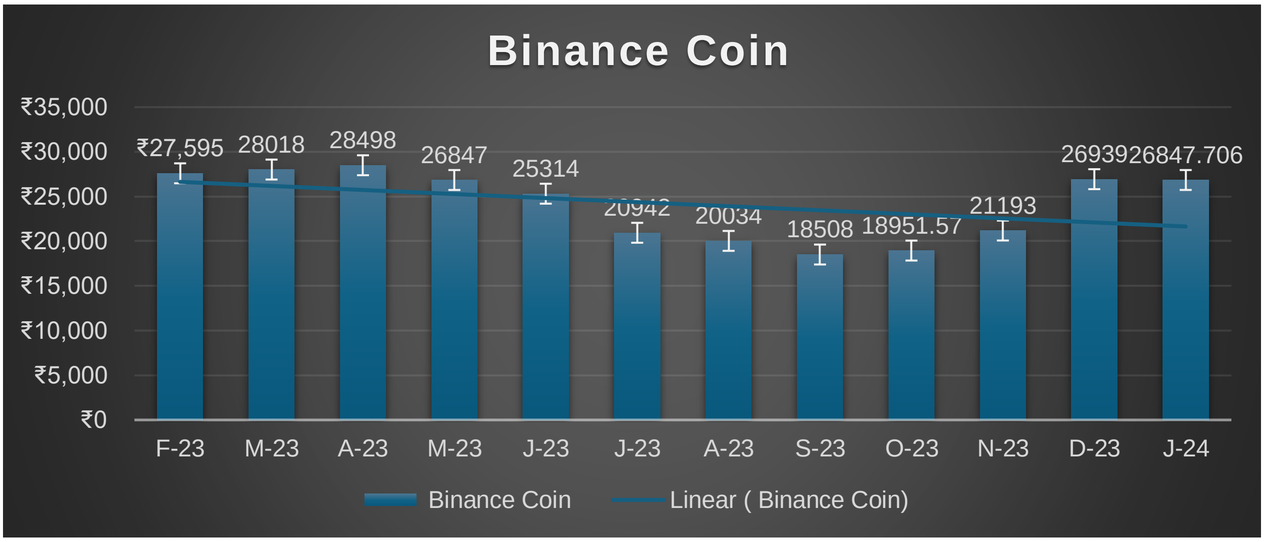

Figure 3: Price Fluctuation in Binance coin during February 2023 to January 2024

Table 4: Tether's Price Fluctuation of Bitcoin during January 2023 to January 2024.

Months	**Tether**
Feb 2023	₹82.93
Mar 2023	₹83.03
Apr 2023	₹83.149
May 2023	₹82.887
Jun 2023	₹82.621
Jul 2023	₹82.759
Aug 2023	₹83.02
Sep 2023	₹ 83.70
Oct 2023	₹ 83.446
Nov 2023	₹84.561
Dec 2023	₹84.62
Jan 2024	₹83.59

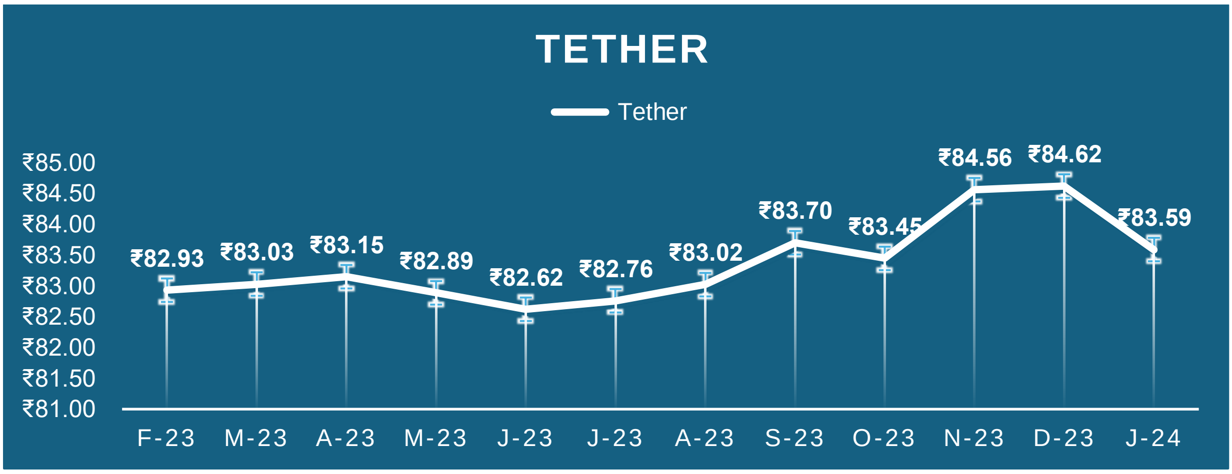

Figure 4: Changing price of Tether's during February 2023 to January 2024

Table 4: Solana's Price Fluctuation of Bitcoin during January 2023 to January 2024.

Months	**Solana**
Feb 2023	₹ 2152.93
Mar 2023	₹ 1811.2
Apr 2023	₹ 2015.86
May 2023	₹ 1796.97
Jun 2023	₹ 1802.29
Jul 2023	₹ 2246.59
Aug 2023	₹2094.36
Sep 2023	₹ 1688.02
Oct 2023	₹ 3204.66
Nov 2023	₹ 5442.18
Dec 2023	₹ 10101.02
Jan 2024	₹ 9108.62

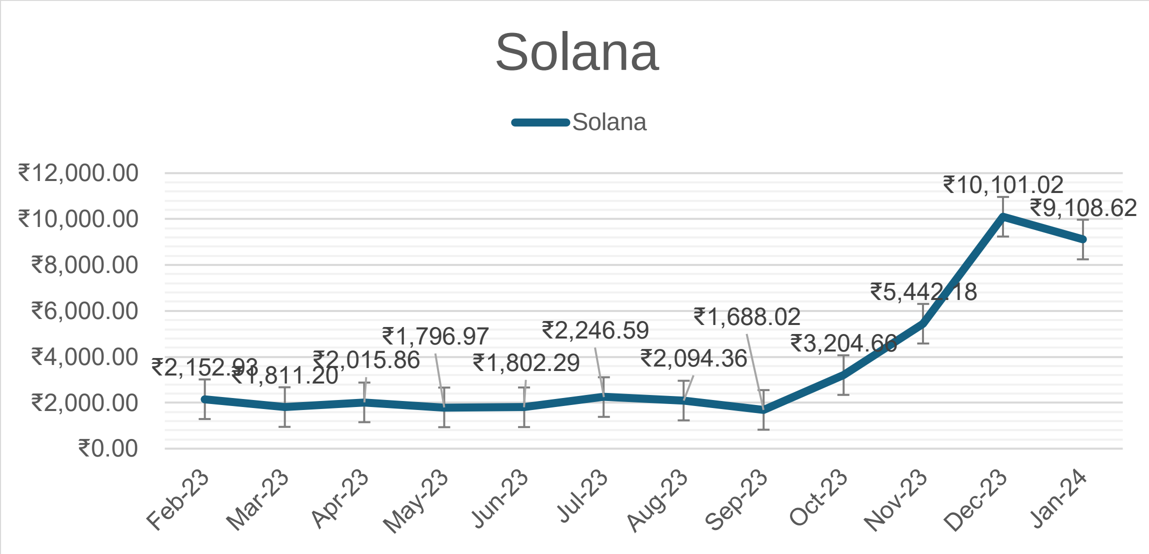

Figure 5: Changing price of Solana's during February 2023 to January 2024

Table 5: Compare the Price of the Top Five Cryptocurrencies in India and the Fluctuation in it During February 2023 to January 2024.

Months /Cryptocurrencies	Feb 2023	Mar 2023	Apr 2023	May 2023	Jun 2023	Jul 2023	Aug 2023	Sep 2023	Oct 2023	Nov 2023	Dec 2023	Jan 2024
Bitcoin	₹19,98,288.705	₹23,35,069.134	₹24,91,877.483	₹24,13,231.903	₹25,04,977.227	₹25,77,007.007	₹24,50,316.894	₹22,41,311.82	₹28,83,649.993	₹31,42,999.112	₹36,96,519.000	₹40,49,999.000
Ethereum	₹14,649.404	14,9567.728	₹172952.479	₹162889.069	₹156991.662	₹164027.747	₹142358.149	₹137110.006	₹150953.793	₹17646.243	₹197904.006	₹217649.016
Binance Coin	₹2759.71	₹2818.833	₹28498.849	₹26847.41	₹25314.325	₹20942.52	₹20034.352	₹18508.417	₹18951.57	₹21193.056	₹26939.608	₹26846.706
Tether	₹82.93	₹83.03	₹83.149	₹82.887	₹82.621	₹82.759	₹83.02	₹83.70	₹83.446	₹84.561	₹84.62	₹83.59

Solana	₹2152.93	₹1811.2	₹2015.86	₹1796.97	₹1802.29	₹2246.59	₹2094.36	₹1688.02	₹3204.66	₹5442.18	₹10101.02	₹9108.62

As we can see that in the above table and all chart, which have been selected top five cryptocurrencies in India as well as we are comparing the price of the top cryptocurrencies in India, During the period from February 2023 to January 2024, the table provides a detailed comparison of the prices of the top five cryptocurrencies in India, namely Bitcoin, Ethereum, Binance Coin, Tether, and Solana. the notable price movements and fluctuations observed for each cryptocurrency:

Bitcoin (BTC):

Lowest Price: ₹19,98,288.705 (Feb-23)

Highest Price: ₹40,49,999.000 (Jan-24)

Significant Increase: Bitcoin exhibited substantial growth, more than doubling in value from its lowest observed price in February 2023 to the highest point in January 2024. The aforementioned demonstrates Bitcoin's fluctuations as well as potential for substantial gains in an extremely brief amount of time.

Ethereum (ETH):

Lowest Price: ₹137,110.006 (Sep-23)

Highest Price: ₹217,649.016 (Jan-24)

Noteworthy Growth: Remarkable Growth: Although Ethereum showed considerable volatility, its value increased considerably, peaking in January 2024. The increase in Ethereum's value indicates that there will likely be continued demand for this cryptocurrency.

Binance Coin (BNB):

Lowest Price: ₹20,034.352 (Aug-23)

Highest Price: ₹28,498.849 (Apr-23)

Fluctuations: The price of Binance Coin fluctuated all year long, peaking in April 2023 and then continuing to fluctuate. It also implies that throughout the investigated period, values fluctuated as a result of market fundamentals and sentiment between investors influencing BNB's value.

Tether (USDT):

Lowest Price: ₹82.621 (Jun-23)

Highest Price: ₹84.62 (Dec-23)

Stablecoin Characteristics: Because Tether is a stablecoin that is based on the value of fiat money, its values have remained comparatively steady. In contrast to more erratic cryptocurrencies, its position as a steady repository of wealth is consistent with the little gain seen over the months as well.

Solana (SOL):

Lowest Price: ₹1,688.02 (Sep-23)

Highest Price: ₹10,101.02 (Dec-23)

Remarkable Surge: Around the end of the year, Solana's value had increased dramatically, with a notable spike in price. This suggests increased interest in and funding for Solana, maybe as a result of advancements in technology or other elements that enhance its value offer. Considering every digital currency exhibiting particular trends of development, stability, or fluctuations, the research emphasizes the market's dynamic character. A wide variety of price changes would have been seen by investors and cryptocurrency aficionados in the Indian market, highlighting the need of being knowledgeable and flexible to market trends throughout this period.

Comparative price analysis of the top five cryptocurrencies over the past year (For 1 Year).

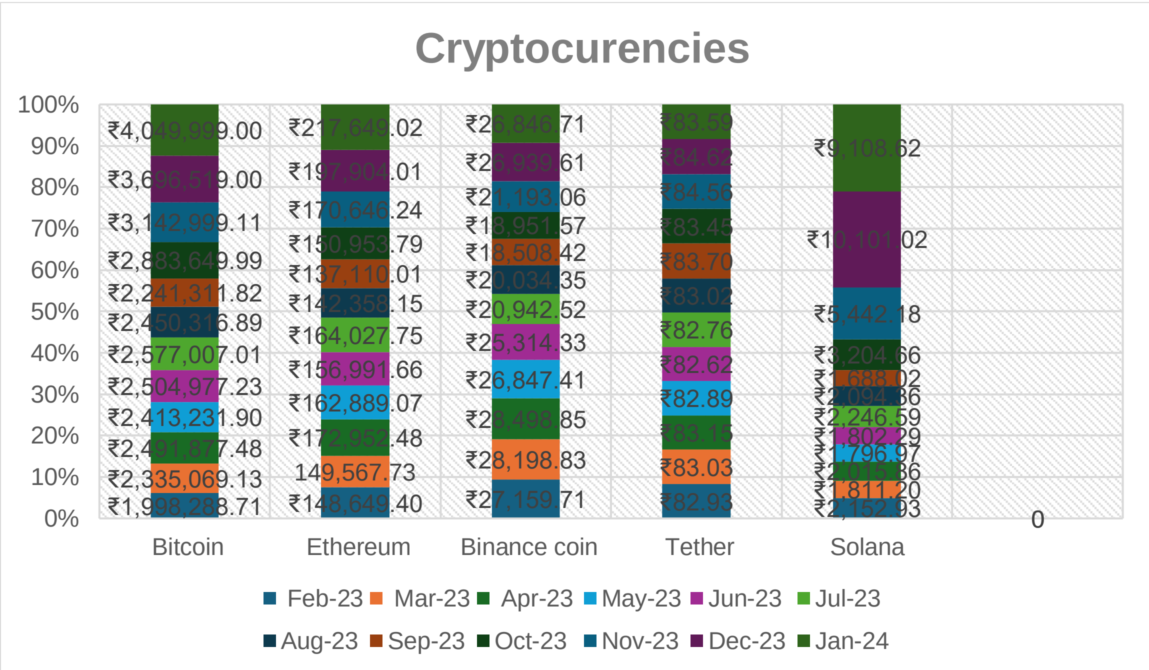

Figure 6: Comparative 12-Month Price Analysis

The graphs as shown above reflect changes in price over 12 months of individual cryptocurrencies (Figure 1 to Figure 5) as well as of all cryptocurrencies taken together (Figure 6). the cryptocurrency market experienced a downward trend in December 2023, attributed to the pre-Christmas market conditions. However, there was no specific regulatory or market development identified as the cause for this decline. Subsequently, in January 2024, there was a significant increase in the prices of the selected cryptocurrencies, driven by favourable market conditions.

The narrative then indicates a change in the market dynamics in February and March 2024, affecting both the cryptocurrency market and the stock market. The cause for this change is attributed to government restrictions imposed in India, which started in December 2023. Let's break down the key points:

December 2023 Decline: Cryptocurrencies experienced a downward trend in December 2023.The cause for this decline is associated with pre-Christmas market conditions.

January 2024 Surge: Cryptocurrencies saw a significant increase in prices in January 2024.This surge is attributed to positive market conditions.

February and March 2024 Impact: Both the cryptocurrency market and the stock market were affected. The cause for this impact is linked to government restrictions imposed by the Indian government, starting in December 2023.

Government Restrictions: The specific details of the government restrictions are not provided. However, it is stated that these restrictions affected the entire country, impacting both the traditional stock market and the cryptocurrency market.

In order to provide a more detailed explanation, it would be helpful to know the specific nature of the government restrictions imposed in India in December 2023 and how they affected both markets. Additionally, understanding any subsequent developments or changes in the regulatory environment could further clarify the situation.

Results and Findings

Bitcoin (BTC): Experienced significant growth, more than doubling from ₹19,98,288.705 (Feb-23) to ₹40,49,999.000 (Jan-24). Highlighted Bitcoin's volatility and its ability to undergo substantial value increases.

Ethereum (ETH): Showed noteworthy growth, with the lowest at ₹137,110.006 (Sep-23) and the highest at ₹217,649.016 (Jan-24). Indicated continued interest and demand for Ethereum.

Binance Coin (BNB): Displayed price fluctuations, reaching the lowest at ₹20,034.352 (Aug-23) and the highest at ₹28,498.849 (Apr-23). The volatility suggested susceptibility to market dynamics and investor sentiment.

Tether (USDT): Maintained stable prices, with a modest increase from ₹82.621 (Jun-23) to ₹84.62 (Dec-23). Characteristic of a stablecoin, Tether served as a stable store of value amid the volatility of other cryptocurrencies.

Solana (SOL): Witnessed a remarkable surge, with the lowest at ₹1,688.02 (Sep-23) and the highest at ₹10,101.02 (Dec-23). The surge indicated heightened interest and potential investment, possibly driven by technological developments.

Market Trends: Cryptocurrency market experienced a downward trend in December 2023, attributed to pre-Christmas conditions. January 2024 saw a significant surge in cryptocurrency prices due to positive market conditions.

Government Restrictions (February and March 2024):

Both cryptocurrency and stock markets were impacted by government restrictions imposed in India, starting in December 2023. Specific details of the restrictions and subsequent developments are not provided.

In summary, the analysed period showcased diverse patterns in cryptocurrency prices, with some experiencing significant growth, stability, or volatility. The market dynamics changed in February and March 2024, attributed to government restrictions in India, impacting both traditional and cryptocurrency markets. However, detailed information on the nature of these restrictions and any regulatory changes would be essential for a comprehensive understanding of the situation.

5. CONCLUSION

The quote by the CEO of the Ripple "If the cryptocurrency market overall or a digital asset is solving a problem, it's going to drive some value. — Brad Garlinghouse." This sentiment reflects a growing concern as the number of investors in cryptocurrencies continues to rise. The trajectory of Bitcoin, as well as the broader spectrum of cryptocurrencies, suggests a shifting landscape. The surge in Bitcoin and Ethereum prices since 2017, culminating in record market capitalizations, was followed by a downturn attributed partly to regulatory actions such as the banning of initial coin offerings by some platforms. Other cryptocurrencies like Binance Coin, Tether, Solana experienced major growth in cryptocurrencies in 2023 and 2024. A significant challenge faced by cryptocurrencies is the lack of transparency regarding trading parties, exposing investors to various risks, including compliance breaches with anti-money laundering and counter-terrorism financing laws. In developing countries like ours, where literacy levels remain low, the risks associated with cryptocurrency investment outweigh the potential benefits. Evaluating the characteristics of cryptocurrencies against various criteria underscores the reasons why many individuals opt against investing in them, prioritizing safety and security in financial transactions.

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Risk Assessment and Hedging in Indian Energy Sector Using Commodity Derivatives

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ABSTRACT

The Risk assessment and hedging remark about figuring out how bad price swings in things you buy (like coal) could hurt your business. Hedging is like taking out an insurance policy with commodity derivatives to protect yourself from those price swings. The study analyses hedging effectiveness for crude oil and natural gas. Hedging, however, mitigated certain elements of the price risk. A fractional hedge, whereby not all price fluctuations were neutralized, is suggested by the hedge ratios. The Multi Commodity Exchange of India (MCX) provided the additional information for the study. The data was examined applying statistical and financial methods, including standard deviation, correlation coefficients, efficacy, and hedge ratio analysis. According to the findings, products derivatives can help Indian energy corporations mitigate risk, but only if they are utilized systematically. The efficacy of hedging may be increased, and businesses should take into account variables other than price swings, such as laws and new technology.

KEYWORDS: Risk Assessment, MCX, Derivatives, Risk, Hedging

1. INTRODUCTION

A steady and reliable supply of energy is essential to India's flourishing economy. On the other hand, price fluctuations brought on by shifting fuel prices, climate conditions, and international crises presents serious issues for the power business. Indian energy businesses might use commodities derivatives and risk analysis and hedging techniques to reduce these risks and guarantee seamless operations. Financial agreements based on fundamental material commodities, such as petroleum and coal, are known as derivatives of commodity. Businesses may safeguard oneself against variations in prices by employing these techniques. Futures contracts protect investors from unforeseen price increases by locking in a fixed price for future delivery. By granting the opportunity, but not taking on the duty to purchase or sell a good at a given price by a given date, contracts for options provide versatility.

The Indian petroleum industry may profit from hedging in a number of ways. First, by ensuring consistent costs and profits, it encourages pricing stability. Second, it makes it possible to make plans and budget more precisely in a market that is prone to volatility.

Settlements for options can aid by reducing possible losses in the event that prices diverge from what a corporation had anticipated. Lastly, a company's trustworthiness may be enhanced and finance can be more easily obtained through efficient hedging. There are several pertinent mechanisms available on the Indian Commodity Derivatives market. Indian refiners may protect themselves from changes in the price of crude oil on the global market by using MCX Crude Oil. Corresponding to this, power plants that burn coal and gas producers, distributors, and consumers may control price risks related to their separate fuels with the use of MCX Natural Gas and MCX Coal Futures.

In a nutshell the Indian energy industry will need to use commodity derivatives for offsetting and implement robust risk assessment processes in order to manage market uncertainty. Indian energy firms can guarantee economic stability, foster sustainable development, and help assure a secure and reasonably priced energy environment for the country by addressing pricing risks efficiently.

2. REVIEW OF LITERATURE

Halkos et al., (2019) outlined the substantial fluctuations in the petroleum market, the evaluation delivered highlights the need of creating a successful pricing risk mitigation plan for portfolios of investments consisting of energy assets. Leveraging on generally acknowledged scholarly research, the work investigates the alterations of models based on GARCH and the implementation of the Markov-Switching the GARCH model approach for fully evaluating the price of energy fluctuations.

It starts by outlining a wide range of GARCH-type models together with the necessary econometric tests and techniques to build a solid forecasting model for precisely and consistently estimating the volatility of energy prices. In addition, it carefully examines the likelihood of future changes in the unconditional variance of the models, taking into account the impact of economic downturns and unanticipated geopolitical developments. Gupta, S., Choudhary, H., & Agarwal, D. R. (2017): - This article evaluates the hedge ratio and the efficacy of hedging for commodities traded on the National Commodity and Derivative Exchange (NCDEX) and Multi Commodity Exchange (MCX) in India, either agricultural (like castor and guar seed) and non-agricultural (like copper, nickel, gold, silver, natural gas, and crude oil). Both constant and dynamic hedging ratios are calculated via a variety of statistical models. The outcomes indicate that the Indian futures market is more successful at hedging versus industrial metals and energy commodities (less than 50%) than it is with precious metals (varying from 65% to 75%). Furthermore, how well natural gas hedging works. Kallepalli, M. (2017) : - The global financial crisis of 2008 profoundly impacted the world's major economies. Prior to this event, there were two primary methods for trading derivatives. One involved exchange, where various regulatory bodies had set forth regulations that traders were required to follow. The other method was a more unregulated Over-The-Counter (OTC) approach. In comparison to exchange-based trading, OTC trading saw a significantly higher volume of transactions. This was largely due to the flexibility it offered in customizing contracts, unlike the standardized contracts mandated by exchanges. Sahoo, A. (2016): - The paper investigates corporate risk management practices in leading non-financial companies in India, aiming to mitigate various business risks that may impede achieving business objectives. It explores the utilization of financial derivatives by corporations and identifies forwards and swaps as the predominant derivative products in India. Futures emerge as the preferred alternative to traditional risk management tools for Indian enterprises due to their standardized nature. Derivatives are primarily employed in the Indian economy to hedge foreign currency risk, with interest rate risk being the most prevalent exposure based on international derivative outstanding positions. Information technology stands out as the sector with the highest recorded derivative usage according to industry classification. Kumar, B., & Pandey, A. (2009, August): - The usefulness of hedging for 7 other than agriculture and 4 agro futures agreements exchanged within India is investigated in this article. It discovers that, in comparison to non-agricultural futures (20%), agricultural futures contracts show greater hedging efficacy. Furthermore, compared to previous years, Indian futures markets show increased hedging efficacy. An examination of the efficacy of hedging in Indian other than agriculture futures exchanges vis-à-vis global spot exchange indicates a significant improvement in mitigating exposure to swings in global prices. Lower hedging efficacy in Indian futures contracts may be caused by poor contractual layout, high fees for transactions in the immediate market, and insufficient participant knowledge of futures markets. These difficulties are common to emerging nations' fledgling futures markets and are predicted to change with time.

3. METHODOLOGY

Problem Statement: The Indian energy sector faces risks like volatile commodity prices and needs to better utilize commodity derivatives for hedging. However, many companies lack awareness, find them complex and expensive, and are unsure about the tax implications. Research is needed to understand these challenges and other aspects like:

- ✓ Best hedging strategies for different energy companies.
- ✓ Hedging's impact on financial performance.
- ✓ The government's role in promoting derivative use for risk management.

Objectives of the Study

- ✓ Identify the most common risks faced by energy companies in India.
- ✓ Examine how energy companies in India are currently using commodity derivatives to hedge their risks.
- ✓ Develop hedging strategies for different types of energy companies in India.
- ✓ Identify the challenges faced by energy companies in India in implementing hedging programs.

Hypothesis

H0: Commodity derivatives are not effective in managing risk in the Indian energy sector.
H1: Commodity derivatives are effective in managing risk in the Indian energy sector.

Research Design

In this investigation, I utilized a cross-sectional research methodology, which involves analysing data gathered from a group of individuals within a particular period of time. On the basis of certain interest-related factors, participants were chosen. Cross-sectional research are widely used in social science, education, psychology of development, and other domains. They are descriptive observational studies that do not establish causation or relationships, and therefore cannot determine the cause of a phenomenon like an illness. Researchers collect data from a population without manipulating any variables. While cross-sectional studies are useful for identifying characteristics within a community, they are not suitable for establishing causal relationships between variables. This approach is often used to explore potential connections or to gather preliminary data for further research and experimentation.

Data collection method

This research primarily utilizes secondary data.
Population: The target population for a study on risk assessment and hedging in the Indian energy sector using commodity derivatives is all type of energy commodities in India.
Sampling Method: Sample method for a study on risk assessment and hedging in the Indian energy sector using commodity derivatives is stratified sampling. This is because the Indian energy sector is a diverse sector with commodities. Stratified sampling ensures that the sample is representative of the population, which is important for obtaining accurate and reliable results.

Data Analysis and Interpretation

Return on unhedged (RU) = (St+1)-St
Return on Hedged (RH) = (St+1-St) - H*(Ft+1-Ft)
Hedge ratio = correlation *(std dev. future price / std dev. spot price)
Variances of an unhedged and a hedged portfolio are:

$$Var(U) = \sigma_S^2$$
$$Var(H) = \sigma_S^2 + H^2\sigma_F^2 - 2H\sigma_{S,F}$$

- Effectiveness

$$Effectiveness(E) = \frac{(Var(U) - Var(H))}{Var(U)}$$

➢ Descriptive statistics for crude oil.

Standard Deviation (Spot Price)	501.702
Standard Deviation (Future Price)	494.57
Variance (Unhedged return)	17860.56
Variance (Hedged return)	12693.58
Correlation	0.6872
Hedge ratio	0.6774
Effectiveness	0.2892

➢ Descriptive Statistics for natural gas

Standard Deviation (Spot Price)	35.9531
Standard Deviation (Future Price)	34.28
Variance (Unhedged return)	93.48
Variance (Hedged return)	63.40
Correlation	0.8695
Hedge ratio	0.8291
Effectiveness	0.32176

4. DATA ANALYSIS & FINDINGS

- Standard deviation of spot price for crude oil is 501.702. whereas the standard deviation for future price is 494.57.
- Variance for unhedged return is 17860.56 and for hedged return is 12693.58.
- The correlation coefficient of 0.6872 indicates a moderately A favourable relationship between the hedged position and the price of the actual resource. This suggests that the derivative partially moved in the same direction as the commodity, reducing some of the price risk.
- The hedge ratio of 0.6774 signifies a weaker partial hedge. This implies that only 67.74% of the price movements were offset by the hedge, leaving a larger portion of the position exposed to risk.
  Effectiveness of 0.2892, our conclusion is Moderate evidence for H1.
- Standard deviation of spot price for natural gas is 35.9531. whereas the standard deviation for future price is 34.28.
- Variance for unhedged return is 93.48 and for hedged return is 63.40

- The correlation coefficient of 0.8695 indicates a moderately A favourable relationship between the hedged position and the price of the actual resource. This suggests that the derivative partially moved in the same direction as the commodity, reducing some of the price risk.
  The hedge ratio of 0.8291 signifies a weaker partial hedge. This implies that only 82.91% of the price movements were offset by the hedge, leaving a larger portion of the position exposed to risk
- Effectiveness of 0.32176, our conclusion is Moderate evidence for H1.

Limitations of the study

- To evaluate sample units' performance, only quantified finance data and secondary data have been employed.
- The data collected is restricted to past one year includes a small selection of financial metrics.
- Factors outside the scope of the study, such as regulatory changes, technological advancements, or competitive landscape shifts, can impact the price.

5. CONCLUSION

The effectiveness of offsetting and the risk-minimizing offset ratio for specific commodities like —natural gas and crude oil—in the Indian commodity futures marketplace are investigated in the present research. The constant hedge ratios are determined using a correlation model. Recently, there has been a noticeable rise in market activity, leading to an expanded Indian commodity futures markets' function in hedging. Additionally, we explore potential stronger connections between Indian commodity futures markets and international futures markets, particularly for industrial metals and energy commodities. While commodity derivatives hold immense potential for the Indian energy sector, their effective utilization demands a balanced approach acknowledging both benefits and drawbacks. By proactively addressing the challenges and capitalizing on the opportunities, Indian energy companies can navigate market uncertainties and achieve sustainable growth. The study underscores the critical role of risk assessment and hedging through commodity derivatives in safeguarding the Indian energy sector against uncertainties. By adopting sophisticated risk management practices and aligning strategies with market conditions, companies can enhance their resilience and contribute to the overall stability of the energy market in India.

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Innovative Mechanization in Postal Services: A Preliminary Data Assessment of Northwestern India

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ABSTRACT

The paper presents the compilation assessments, made after examining its different aspects, as follows:

Purpose: *To preliminarily associate operations, analysing utility, and suggest reform ideas.*

Methods: *The paper is a qualitative one, with a primary focus on conducting descriptive analysis based on field visits. Initial field screening was held in stated regions of northwestern India.*

Key findings: *Delhi circle held that the Mechanization of process may help in postal operations in handling high traffic. Haryana circle had the approvals delays as the key issue, that needs development. Himachal and Punjab circle had the shortage of staff and illiterate customers.*

Conclusion: *Future is prospected to minimize human involvement with lesser physical presence of customer and seller. Self-vending machine may go successful, but teller is needed.*

Suggestions: *Addition of more offices, staff and counters, with specialised training and counselling may help. Practical operability and reach using thermal or solar heating equipment, drone and Heli taxi can add. Extension on demographic and psychographic dimensions of products in other circles and across nation can add for the betterment of commercial portfolio of the department.*

Implications: *The study results are only confined to department of posts or the comparative sectors. The paper discusses the necessity of implementing mechanization and technological advancements to improve efficiency. The study emphasizes potential areas for startups to introduce innovation. It emphasizes the societal significance of postal services. Regarding the environmental aspect, the proposal to utilize solar equipment is an ecofriendly practice.*

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KEYWORDS: Automation, Postal Services, Preliminary Data Assessment, North-Western India, Literacy

1. INTRODUCTION

India Post is offering a strand of services, which helps in covering and developing different aspects of communication facilitation and financial inclusion since last two centuries approximately through its network of 0.15 million POs. Regardless of various initiatives offering entire assurance specially within the rural regions, inclusion is not so successful, bearing many field limitations and regional anomalies. To become the leader big challenge amid acute technology competition in this regard, is focusing the users' desires effectively at their doorsteps. To assist that, Infosys has been selected by IP for an application to enhance India public's financial services across 150000 POs. For the assignment, it assisted IP in complete machine integration, facts migration and system deployment and solutions throughout all identified POs, helping multi-year offerings utility support and infrastructure operations, training +35000 IP employees. Speaking on this deal, AS Prasad, DDG, economic services, IP said, "this transformational software is predicted to adorn IP's enterprise" (Infosys newsroom). Darpan Project, a part of larger IT modernisation project, will increase the department's rural reach (India Post, 2017). Looking on IP innovations and the ground hindrances, **this paper presents a basic enumeration of key aspects observed of department of posts in the stated regions of northwestern India.**

2. REVIEW OF LITERATURE

A limited literature was available on post offices and other relevant aspects. The few initial studies found were observed done as follows:

Jain, Morris, & Raghuram (2001) examine troubles around IP. Moves of IP were noted. Palacios, & Sin (2001) found the demanding situations of old age savings in India. They could device solution for modern-day individuals underneath pressure.

World Bank (2002) counselled that IP is particularly nicely positioned to address the pressures of changing surroundings by expanding services into non-traditional regions along with e-banking, e-authorities and e-trade.

Raghavan (2005) highlighted on PO savings bank as one of the largest pension distributor and largest life insurance company. As per him, challenges confronted are routine deficits, restricted capital expenditure, the preponderance of workforce expenses, a negative internetworking ratio, lagging circles, flawed costing strategies, and non-economic pricing.

Ranganathan (2005) stated that with the net, cellular telephone network revolution posing the risk of making the letter mail out of date, postal monopolies throughout the sector are in process of restructuring and/or privatization. The study has been targeted on identifying the motives.

Hari Sundar, & Jacob (2009) attempts to study endowment in Cochin district. The examiner exhibits the reality by PO maximum discount functions.

Subrahmanian (2010) highlights the importance of training of personnel in DOP. The focal point is on edification to improve pleasant motion and continuous development, he adds. Planning commission (2011) have emphasized the want of the modernization of IP. The improvement in IP suggested by tips thru specialists. Aggarwal (2012) looks at the various factors which focus on influencing the traders to invest many of the distinctive financial saving schemes of the POs. Instructions have an enormous effect at the saving.

Malakar (2013) looks at the function played via IP in monetary inclusion and the challenges before the IP in supplying banking services, using discussions with officials of IP. He acknowledged that IP served Indian villagers as a banker lot earlier than monetary inclusion turn out to be buzzword and IP claims to be the pioneer of monetary inclusion in India.

Samal (2013) put forward that due to great use of digital media, more worrying clients, presence of courier, economic establishments, and challenges of globalization, corporatization and liberalization, PO must take the right steps for its survival. He highlighted business improvement, IT modernization, and service improvement, to be taken by the IP.

Giri (2014) discusses the situation of economic services and technology modernisation. It also highlights the opposite generation driven offerings of the Pondicherry postal division.

Potadar, M., Mehta, & Potdar, S. (2015) look on the extra demanding situations, IP may have. IP becomes the immediate enterprise eliminating market stress and locate itself efficaciously.

Birajdar, & Joshi (2016) specializes in excellence of offerings that are provided by IP. They point out the importance of maintaining the service for extended client pleasure.

Kanda, et al., (2021) observed the consumer acceptance and use of information technology in Indian postal services. They observed failure handling having the most impactful effect on brand value, loyalty and related factors.

Kanda, and Bhalla (2021) assessed administrative efficiency of employees of Indian post offices. They found that there is a considerable impact of work flexibility on employee satisfaction. Kanda and Bhalla (2021) explored on customer satisfaction of users of Indian post offices. As per them, failure handling has a more detrimental impact on make worth and allegiance.

Kanda, et. al (2021**)** referring tourism related perspectives of India post regarding the post offices located in the tourism hotspots, presented a perspective regarding the post offices located in the tourism hotspots. They recommended that how the scenario can be strengthened.

Bhalla, Shukla, and Kanda (2022) assessed on the role of Indian postal services amid covid-19 in north India. They appreciated the adequacy, dynamism and turbulent support the postal services rendered. Dobrodolac, Lazarevic, and Jovcic (2024) proposes integrating the concept of shared mobility into the postal delivery system, by that expanding the existing assortment of services.

2.1 RESEARCH GAP

Assessment dialogue tells that least observe is available on northwestern India. Only a few studies in international context have been found held in practice. While, referring to the actual studies in Indian context, only four studies have been observed held on, where the earlier three were held by some prior authors, while the latter fourth one is held by the present author itself. Coming to a grassroot assessment of in specific department, significant gap is there.

2.2 RESEARCH OBJECTIVES

To preliminarily assess and associate factors of operations of postal, banking and other services at PO.

To analyse the product utility amid provider, intermediaries, users w.r.t. entrepreneurs and startups.

To summarize reformatory suggestions to facilitate further development of public and business.

Accordingly, the **purpose** of this study is to preliminarily assess and associate the basic factors of operations, analysing the product utility of the products, and to summarize reformatory suggestions.

3. METHODOLOGY

The paper is a qualitative one, with a primary focus on conducting descriptive analysis based on field visits. Initial field screening was applied as an instrument of initial enquiry towards the aspects. It helped us to understand and observe the consumer preference and staff view for the different set of postal services and products. It also helped us to observe the agent views. It was held in Chandigarh, Delhi, Shimla, Ludhiana, using depth interviews. It was undertaken using the predesigned multiparty interview schedule for the purpose, filled based on conducted depth interviews. In the Initial Field Screening, under the Initial Field Screening, the researcher performed a line by line transcribe of the interviews and the transcribed document was running into pages. All the transcribed statements were retained relating to the same concept and were worded differently. As per the grounded theory (Strauss, & Corbin, 1990), each statement was categorised under respective concepts (Ollapally, 2015).

4. DATA ANALYSIS & FINDINGS

As per the principles of grounded theory (Strauss, & Corbin, 1990), each statement collected in field visits was categorised under respective concept (Ollapally, 2015**).** Initial field screening was held in different offices of Delhi, Himachal, Haryana and Punjab Circles as follows:

1) Delhi Circle

Delhi, officially Delhi NCT, is a union territory and the federal capital (MLJ, 1991; Habib, 1999). The entire NCT's populace was 16.8 million in 2011 (City Population), with Delhi urban being the world's second biggest urbane (United Nations, 2016), inhabited since the 6 Century BC (Asher, 2000), and emerged critically after 1900's becoming global corporate and economic centre (NCRPB) as second wealthiest metropolis, and home to 23000 millionaires and 18 billionaires (Global Data Lab). The federal and local authorities administer the New Delhi mutually, under the ambit of the planning board act 1985 (NCRPB). We visited Meghdoot Bhawan (CPMG, Delhi Circle) on 11/2/2020. In post, high traffic is observed there. Mechanization of process may help. In savings, it is looking for developments.

Delhi NCT

Gole market was built by Edwin Lutyens in 1921 (ANI, 2023), where Gol Dak Khana GPO is 800 meters from it, designed by Robert Russell in 1931 (ANI, 2023). We visited Gol Dak Khana (New Delhi HO) on 11/2/2020 and 25/2/2020. In postal segment, user look mostly for speed, parcel, and registered post. In savings products, user purchase in bulk, having all secured. Insurance is only for government employees. The building is an old heritage structure, that needs conservation and restoration.


We visited the infamous **Dak Bhawan**, Department of Posts at Sansad Marg, formally housing Sansad Marg HO and National Philatelic Museum on 25/2/2020. In postal segment, user look mostly for speed, parcel, and registered post. In savings products, user purchase in bulk, having all secured. We visited Kashmiri Gate GPO on 8/2/2020. In postal segment, in staff view, parcel, bulk, registered, speed post and philately are taken. In savings, in agent views, FD, pensions, motive-based saving are taken.

2) Haryana Circle

The word 'Hariyana' has its oldest mention is in Rigveda, used as an adjective for the king (Deshwal, 2004). After Partition of 1947, government agreed to divide East Panjab, with Chandigarh as a joint capital of Haryana covering 1.4% of India's total area (Government of Haryana; Department of Economic and Statistical Analysis). Gurugram, the leading financial hub with 500 fortune companies is also located in the NCR (India Today, 2017; NIDM; MOSPI; Business Standard, 2019), being the state 12th largest in India (PRS Legislative Research). There industrial corridor projects and 30 SEZ's link the NCR (Department of Economic and Statistical Analysis; IBEF). Faridabad is defined the eighth fastest growing city (www.citymayors.com). Gurugram tops the IT growth rate (CEOWORLD magazine). Haryana is ranked 7th in HDI (Global Data Lab). We visited Gurgaon PMG on 11/2/2020, and CPMG

Haryana at Ambala cantonment on 12/2/2020. In postal segment, user look for speed, registered post and philately specifically. In savings, user go for TD and SB.

Ambala

Ambala cantonment has a large military base and the air force. Its geographical position makes it critical in local tourism. We visited Ambala cantonment HO at Staff Road on 7/2/2020. In postal segment, speed, registered, parcel post, post card and stamps are taken for. In savings, TD, saving, Atal pension, and Sukanya are mostly taken. Insurance is being promoted for professionals now. Rural computerisation in vast stretch is a strength. Customer look in utility, trust and security. We visited RMSD Ambala cantonment on 3/2/2020. In postal segment, speed, registered, ordinary and parcel post are taken for. We visited SSPO, Ambala division situated at upstairs Ambala cantonment GPO on 19/3/2020. For postal services, user look speedy, authentic and cost savvy service / products. For savings products, user seek full-fledged banking.

Panchkula

We visited Panchkula SO on 06/10/18. In postal segment, post is a reliable, cost and time efficient solution for users. In savings, interest and convenience are the product USPs.

Rohtak

We visited Rohtak HO on 25/2/2020. In postal services, user look for optimum time, charges, brand, safety and authenticity. In savings products, user seek brand and convenient solutions.

Gurugram

Gurugram is the most populous city in Haryana. We visited Gurgaon HO on 11/2/2020. In postal segment, speed, registered and parcel post are preferred with no effect of courier. In savings, time deposits, and small saving account are looked for. Insurance is being promoted for professionals verbally. Customer view look in brand and security of funds. Self-vending machines can work well.

Panipat

During the 8th battle of terrain, Ghori defeated Prithvi Raj here (Deshwal, 2004). We visited Panipat HO on 26/2/2020. In postal services, user look for optimum time, charges, brand, safety and authenticity. In savings products, user seek easy, in close proximity, brand and convenient solutions. Insurance is not so popular.

Hissar

We visited Hissar HO on 28/2/2020. In postal services, user look for optimum time, charges, safety and authenticity. In savings products, user seek brand and convenient solutions.

3) Himachal Pradesh Circle

According to Puranas, Himachal Pradesh is the Jalandhar Khand and Kedar Khand, known as "Dev Bhumi" to the ancients, and located in the Western Himalayas (Balokhra, 2007), with the society is divided into castes and sub-castes. We visited CPMG Himachal Pradesh office and officials at Kasumpti, Shimla on 14/2/2020. In postal segment, postal services are the preferred product options, given vast reach everywhere. In savings, saving products are preferred mostly in rural markets.

Shimla

Shimla was the spring capital of British and became capital of East Punjab and Himachal consecutively (Chauhan, 2019). The city hosted the 1972 Shimla agreement. We visited Ambedkar Chowk PO, Shimla GPO and SSPO office, Shimla division on 13/2/2020. In postal segment, there is good response for all services bearing vast network in hills. In savings, voluntary training and information is usually provided to agents. Insurance is very efficient for government employees. Customer look in authenticity, safety, brand repute, security of investment and all place delivery. We visited SSPO Shimla. We visited Kasumpti SO, Chotta Shimla PO and Summer Hill PO on 14/2/2020. In postal services, speed, parcel and registered post are preferred.

Kullu Manali

Kullu is called the valley of gods and thus every village has its local deity (Balokhra, 2007). There are various places of interest in the vicinity. We visited Kullu HO on 15/1/2020. Things were up to mark.

Mandi

Mandi is a town on the banks of river Beas (Balokhra, 2007: Chapter :5 – Cultural Heritage, P. 158). We visited Mandi HO on 18/1/2020. For postal services, parcel noted was used mostly.

Dharamshala

Dharamshala was declared the second capital of Himachal Pradesh by CM Virbhadra Singh on 19 January 2017. We visited Dharamsala HO on 12/1/2020 and 13/1/2020. For postal services, article safety and timeliness are a matter of preference, to the customers and users. For savings, products are good much looked for, along with other options sold in region by competitors.

Kanghra

Kanghra, the highest populated in Himachal, had Katoch as the oldest Dynasty (Balokhra, 2007). Kanghra, Hamirpur, Kullu, Lahul and Spiti formed Kanghra district of undivided Punjab (Kumar, & Kundal, 2016). We visited Kanghra HO in Himachal Pradesh for the first time on 31/08/19 and 12/1/2020. For postal services, things were up to mark with parcel used mostly along with post. For savings products, consumption is moderate by the users, along with utilisation of banks.

Dalhousie

Dalhousie, named after the viceroy Lord Dalhousie, is having a large church (Balokhra, 2007). We visited Chamba GPO on 13/01/2020. In postal segment, scarce population that is far flung, use ordinary post mostly. Customer view selling through branch correspondent and postman helping.

Una

Una district is home to the holy shrine of Chintpurni. We visited Una HO and SSPO office on 15/1/2020. In postal segment, there is good response for all services bearing vast network in hills. In savings, voluntary training is provided to agents. Customer look in security and delivery.

Hamirpur

Jwala Mukhi sanctum, dedicated to the goddess Jwala was visited by many eminent personalities. We visited Hamirpur HO on 26/08/19. In postal segment, bearing scarce population and a far-flung location, people use ordinary post mostly. In savings, small saving scheme is opted by rural females.

4) Punjab Circle

In the modern history, the word Panjab has been first quoted by Mughals, later seen the rise of Sikhism (Goraya, 2010), with a parallel existence of the British (Chauhan, 2019). The period followed the fall of Punjab as a province of British, where the British made Gulab Singh, king of Kashmir (Dhar, 1977) and took Koh-e-Nur to London (Chauhan, 2019). With 1947 partition, Simla became the capital of East Punjab (Deshwal, 2004). Later, reorganization commission merged hill areas into Himachal (Balokhra, 2007) with rest divided among a Hindu Haryana and Sikh Punjab (Chauhan, 2019). The period from 1980 to 1991 had terrorism (Balokhra, 2007; Chauhan, 2019). The Punjab circle constitute of Indian Punjab and UT Chandigarh. We visited CPMG Punjab at Chandigarh on 12/2/2020. In postal segment, speed, registered, parcel post are the preferred products. Insurance is being promoted for professionals.

Chandigarh

Chandigarh capital region includes Chandigarh, Panchkula and Mohali. We visited Chandigarh GPO on 08/10/18. In postal segment, people go for speed and regd. In savings, SB, TD and NSC are looked.

Ludhiana

Ludhiana is Punjab's largest metropolis with an envisioned population of 1618879 as of the 2011 census (www.smartcities.gov.in). We visited Ludhiana HO on 6/2/2020. In postal segment, speed, parcel, registered post and stamps, with time and safety are sought. In savings, Sukanya, cumulative TD, small savings are taken for. Insurance is being promoted for professionals. Customer look in convenience and suitability. Competitors for financial products have advertised. We visited RMSD Ludhiana then.

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Jalandhar

We visited Jalandhar HO on 11/1/2020. For postal services, things were observed going on. For saving products, mobile banking, investment security and high interest rates are core USP. Insurance products introduction for common professionals is there. Customer view postal services as preferred.

Amritsar

Amritsar is recognized for its wood chessboards, and chess portions producing industry. We visited Amritsar GPO on 20/08/18 and 10/1/2020. For postal services, it was observed that e-resources may not work as some literacy problems may exist in coming future as such. For savings products, it was reported a low hassle solution, with higher interest rate and full security instead of banks.

Pathankot

Pathankot is located the intersection of Jammu and Kashmir, Punjab and Himachal Pradesh. Nurpur state founded by Jhetpal in about 1000 AD, had capital at Pathankot (Balokhra, 2007). We visited Pathankot Rural SO on 31/08/19. In postal segment, regd. post is looked.

4.1 RESEARCH FINDINGS

Opinions and statements of IP officials in the northwestern Indian regions had following findings:

Delhi: Problems faced on selling front is having the high traffic, with most footfall constituting lesser educated migrant population, in an old condensed premises.

Ambala: Only parking seems a limitation. Rural computerisation in vast stretch is a strength. Being a public utility, expenses are more than receipts, causing deficit. Self-vending operations may help.

Gurugram: Problems faced on selling front is excess workload in NCR region. Problems faced on resource front is infrastructure renovation and land area redundancy. Shortage of staff was observed.

Kanghra: Problems faced on the resources front are on material supply sometimes, being harsh terrain.

Ludhiana: Competitors for financial products have advertised superior and extensive in locality to give strong competition and grab customers. Insurance is being promoted extensively for professionals.

Amritsar: Postal products were observed having an authoritative staff. High crowd is selling front problem having limited number of staff. Resource front problem is old infrastructure and equipment.

4.2 DISCUSSION

Previous literature does cite slightly similar results and circumstances on the limited literature available for reference, with limitedly relevant solutions to the explored problems. Only a few studies in international context have been found held in practice. While, referring to the actual studies in Indian context, only four studies have been observed held on, where the earlier three were held by some prior authors, while the latter fourth one is held by the present author itself. Coming to a grassroot assessment of in specific department, significant gap is there. Hence, this study made a significant contribution as a full-fledged grass root field examination, covering some of the past gap.

5.CONCLUSION

Future is prospected to minimize human involvement with lesser physical presence of both parties. Self-vending machine may go successful, but teller is needed given the rural and illiterate populace.

CPMG Delhi Circle had the following observations. Mechanization of process may help in postal operations in handling high traffic. Problems faced on selling front are regional offices ignoring the directions. Problems faced on resource front is internal will lacking for improvement.

CPMG Haryana Circle had the following observations. In postal segment, consumer look for speed, registered post and philately specifically. In savings, consumer go for TD, small saving account. Insurance is limited for government employees only. Problems faced on selling front are high traffic and literacy differences among regionalities. Problems faced on resource front are the government / departmental approvals delays, that are needed to have major developments. Customer look in convenience, price, authenticity, safety and security in products. Gurgaon PMG had the following observations. In post, speed, parcel, and registered post are sought after. In savings, TD taken much.

CPMG Himachal Pradesh Circle had the following observations. In postal segment, postal services are the preferred product options, given vast reach everywhere. In savings, saving products are preferred and taken extensively, mostly in rural markets. Insurance is being promoted for professionals. Infrastructure and resources are up to mark at CPMG, with some management issues. Inner location in hilly terrain may be a slight hindrance. Shortage at regionality level may be there, resource updating is limited in remote locations. As noted by a senior official of CPMG, 2 H.O. are accessible by air at large.

CPMG Punjab Circle had the following observations. In postal segment, speed, registered, parcel post, and philately are the preferred products. In savings, TD, SB, KVP, MGNREGS are preferred. Problems faced on selling front are shortage of staff and illiterate customers in regionality. Customer looks in comfort and brand repute, while choosing the product. A dynamic management style is there.

5.1 RECOMMENDATIONS

The compilation provides us a comprehensive account of the characteristics of the study and the interpretation of results was made using the facts. The study results are useful to departments of posts and its such other competitors and contemporaries in India and abroad. Specific recommendations are:

Timely solutions, authenticity, paperless procedures and minimum effort functions to be focused much. Addition of more offices, staff and counters, with specialised training and counselling should be there.

Himachal and Punjab circle having approvals delays, needs to have early developments responsibly. Practical operability and reach using solar heating equipment, drone and Heli taxi needs to be worked.

5.2 IMPLICATIONS

The paper discusses the necessity of implementing mechanization and technological advancements in postal services to improve financial efficiency and enhance service delivery. It emphasizes potential areas for startups to introduce innovation in postal services, including self-service vending machines and automated teller systems. Suggested solutions will also have many positive benefits for the environment, including lesser pollution, renewable energy utilization, and low fuel ingesting.

5.3 LIMITATIONS

The study results are only confined to department of posts in India with special reference to northwestern India, or in comparison with the relevant competing industries and sectors in India and abroad, given the similarity of economy, social environment and such other factors.

5.4 FUTURE RESEARCH

An extension on demographic and psychographic dimensions with particular reference to individual products in specific regions, circles and national level, using a structured randomized study would be a fruitful extension. Same can be held with the postal and rural finance department of other international economies to test about the similarities and variations.

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Optimizing Talent Acquisition: Recruitment, Screening, Interviewing of Practice Erastar Company, Delhi

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ABSTRACT

The process of skills acquisition should be optimised to ensure that corporations remain viable and creative within the cutthroat business environment of the present day. This paper focuses on the recruitment, screening, and interviewing methods of Erastar Company in Delhi to enhance the effectiveness and efficiency of the employment strategies. This report identifies key challenges to attracting the best expertise, particularly in a hard work marketplace that is increasingly becoming digital and competitive, through a critical analysis of the leading hiring practices. The research in the context of uncovering gift structure bottlenecks and inefficiencies within the corporation uses the method of qualitative research; this may include interviews with hiring managers and HR professionals, and an examination of the recruiting statistics. The findings demonstrate that despite having a solid base to hire individuals, Erastar Company still has numerous areas where it can develop further, such as the interviewing process, time to hire, and screening of applicants. The study particularly stresses the need to have better procedures, better technology applications for screening, as well as higher training of investigators to ensure that the assessment is more comprehensive and objective. The study also emphasizes the importance of aligning the hiring processes with the company culture to ensure employee engagement and retention through sustained employee engagement. By implementing the proposed improvements, Erastar Company can become more efficient in hiring and create a more resilient and inclusive, future-proof talent acquisition strategy. This analysis presents relevant facts that may be considered as a guide by businesses that may wish to redesign their hiring process in the fast-changing business environment.

KEYWORDS: Talent Recruitment, Recruitment, Recruitment strategies, screening, recruitment techniques, organisational effectiveness, human resource management.

1. INTRODUCTION

In recent days, the maximisation of skills acquisition has become a pinnacle problem since human capital is directly connected to performance in organisations. Having its base in Delhi, Erastar Company must find and retain brilliant talent in a competitive market of cutthroat performance. Enhancement of the hiring, screening and interviewing processes of the organisation is essential as it expands to ensure that the right candidates are only absorbed into vacancies. This assessment aims to assess the innovative processes at Erastar.

Determining areas of functionality that need to be developed so that you can optimise and improve the functionality of the hiring technique. The recruitment environment has changed significantly based on the advances in modern technology and the changing expectations of the candidates. However, many companies, such as Erastar, can hardly adapt to those trends successfully. This study seeks to offer practical recommendations through the analysis of the modern practices of Erastar to ensure that the organisation will increase its operational efficiency and align the recruiting style to the organisational culture and strategic goals. In the stop, this observation aims at making talent acquisition more efficient and long-lasting with the help of a framework. Erastar Company was established in 1985 by Dr Hans Müller and Katherine Cheng, who were two progressive engineers with the bold aim of transforming the aerospace quarter. Erastar has expanded its areas over the period of time by providing modern propulsion systems and high overall performance substances. Erastar has established itself as a technology leader through its contributions to every military and business aerospace activity. The advancement of Erastar has not been limited to the aerospace business. Since its inception as an advertising-based corporation, Erastar has soared to include lead technology, public family members, and commercial enterprise development consultancy to enhance the successful operations of both the public and private companies. The organisation ventured into the healthcare business with its subsidiary EraStar Medical, which introduced a new era of tailored healthcare services and forecasting clinical analytics. As of 2014, when Erastar merged with Cytta Corp., it now offers its services in remote tracking and telehealth, greatly expanding its product line within the oil and gas and health care industries. This continued diversification is justified because Erastar has been keen on growth, innovation, and adapting to an ever-changing enterprise environment.

Cultural and Economic Situation of Erastar.

Erastar operates in the production and high-tech sector, where a revolutionary lifestyle is critical. The company works on technical innovation and creates an atmosphere which contributes to research, innovation and new answers. Cultural sensitivity is necessary since teamwork is vital, and a global achievement requires collaboration of various perspectives and cross-cultural cooperation. Moreover, Erastar pays much attention to sustainability and ethics, and according to the global standards, to ensure social integrity and environmental responsibility. The need to have state-of-the-art material as well as technology is financially variable in accordance with the industrial needs, technological advancement as well and the market dynamics. The changes in the market should be made flexible by Estear to remain ahead of the competition. The R&D costs are huge because investments influence the confidence and market environment of the business to increase capital. There is a very competitive global market in which the interaction always contends with the push exerted by foreign competitors, as the interaction works around the complicated regulatory framework. Addressing these issues and dedicating efforts to the strategic growth, innovation, and stability, Erastar will be well-prepared to succeed in staffing quickly developing and transforming high-technology areas and become a long-term successful business. The Technological Focus in Erastar. Erastar is the pioneer of modern technology and materials with high-performing substances and innovative production methods. A significant point of research is the development of composite materials, which are widely applied in the car, aerospace and navy industries since they have the best energy performance and low mass. Moreover, the business collaborates with nanomaterials in order to improve the electricity, conductivity, and reactivity of materials towards various applications. Concerning production methods, Erastar utilises additive production or 3-D printing, and this approach can be used to precisely manufacture complex and customised components. They strengthen the performance, resilience, and longevity of the materials through the application of existing coatings, surface remedies. The company is also a leading edge in photonic and digital technology, comprising optoelectronics, a combination of light and digital architecture to sensors and communication devices, and semiconductors to high-performance components. Erastar also focuses on the energy period in order to sell sustainables, which comprises strong garage structures and efficiency enhancement. The other pillar is automation; the company has smart manufacturing systems, which integrate IoT and AI, along with precision robots, that can enhance the efficiency of production and protection.

3. Technological Focus at Erastar.

Erastar is a contender of modern technology and materials, and its concentration is on high-performance materials and novel production approaches. The organisation handles composite materials, which provide strength, lightweight properties and are essential in the army, the motor and the aerospace industries. The other basic place of hobby is nanomaterials, which amplify characteristics such as electricity, conductivity, and reactivity in various programs. To enhance material performance and additive manufacturing (3D printing), Erastar utilises the use of state-of-the-art coatings to produce specific and customised parts. Erastar also manufactures electric technology, which comprises optoelectronics of up-to-date light and digital device programs and semiconductors of high-performance additives. Erastar operates in a complex environment where it has to maintain the management of the enterprise on a higher level of generation and compliance with the norms. The company deals with the energy era, primarily electricity garage appliances, such as current batteries and innovations in power efficiency, which reduce power consumption. Erastar applies robots and automation in the production process, such as smart manufacturing systems that combine both IoT and AI to streamline production plans and high-performance production robotics to produce and manufacture high-precision products. Erastar meets part of the industry requirements to ensure that it is of the first rate and protection. The ISO 9001 and AS9100 have the strict requirements of the aerospace industry and ensure that the quality of the product is consistent. IATF 16949 encourages constant improvement of car products. The ISO 45001 safety processes are also installed near the environmental requirements, such as the ISO 14001, in order to minimise the environmental impact of the company as well as safeguard the health of the employees. Erastar also complies with the REACH and the RoHS rules to ensure safe chemical use and environmentally friendly product arrangement. Erastar adheres to some enterprise tips in the name of great safety. Assurance of consistency of product quality and adherence to the specific needs of the aerospace industry is done through ISO 9001 and AS9100. In the case of motors, the IATF 16949 encourages continuous improvement.

The safety strategies under ISO 45001 and the environmental guidelines, such as ISO 14001, are implemented to minimise the environmental impact that the company has and to ensure that the health of the employees is not put at risk. Moreover, Erastar complies with the regulations of REACH and RoHS and ensures the safe usage of the chemical elements and ecologically responsible product design. Additional statements of the willingness of the enterprise to act ethically and securely are such regulatory bodies as CE Marking, FDA Compliance, and war minerals reporting. Also, GDPR compliance protects personal privacy, and Erastar's technical innovations are a sure means to intellectual property security. The commitment to excellence in all aspects of its business is also enhanced with the application of the regular monitoring provided by the audits that enforce compliance with these standards of Erastar.

Technological Impact: Erastar has greatly transformed manufacturing in industries that include automobile, aerospace, and arts through the assistance of powerful, lighter and more durable products. Besides improving the general output of the commodity, those modifications steer sustainability through the use of environmentally friendly materials and green technology.

Erastar, the Industry 4.0 pioneer. Zero streamlines production through integration of automation, robots and IoT, keeping in mind real-time insights and predictive maintenance. Their progress in the generation of healthcare and next-generation electronics with biocompatible material and smaller additives is what drives the economic growth as well as global competitiveness. Additionally, the knowledge of ethical woes and collaborative partnerships by Erastar will facilitate the enhanced technical and social impact.

Integrating Historical and Technical Areas: The adventure fast consisted of focusing on speciality material in the sectors such as aerospace and automobile, with Erastar becoming the pioneer in the lightweight composite and new coatings. Over time, the agency increased its product offerings, ventured into the geographical areas of clinical equipment and energy workshops and expanded its global achievements. Industry 4.0 is an automation and robotics system that Erastar implemented, as automation and robotics advanced the sustainability and production of the industry. It has the best technologies at its heart, such as superior materials and specific production, which have enhanced trends in the automobile, aerospace, and medical sectors. At the forefront of innovativeness, Erastar has put in place enterprise standards, fuelled the financial boom, and encouraged fantastic living, thereby preparing itself to be fulfilled in the future.

Definition of Talent Acquisition: To have the desire of a team of workers within a corporation, the acquisition of skills is simply put as the process of determining, attracting, employing and hiring qualified individuals. The knowledge acquisition process is a thoughtful approach to recruiting, enticing and introducing top talents to support the long-term wants of the company; it is more than just filling vacant positions. Meaning of Recruitment: Recruitment is the process of finding, attracting, interviewing, selecting, and hiring qualified individuals for procedural positions in an organisation. It involves recruiting qualified applicants for the activity jobs and ensuring that the company has the required human resources to achieve its goals. Offering of Screening: The process of finding, attracting, interviewing, choosing, and utilising qualified candidates for the procedure positions in an organisation is referred to as recruitment. It involves having qualified candidates fill jobs in the activity, and also having the organisation have the critical human resources to achieve its goals.

Interviewing of Practice: Interviewing is an essential phase in the acquisition of new skills because it will identify whether a candidate is qualified to work in a position, with the assistance of assessing the maximum capacity of applicants. The correct applicants are guaranteed by good interviewing techniques, based on the dreams and lifestyle of the business enterprise. A sample of how interviews are conducted during talent acquisition is provided below:

2. REVIEW OF LITERATURE

Barney and Right (2020) Learn how analytics and artificial intelligence can assist businesses with the use of big data. Employers are able to weed out prejudices that frequently influence the human decision-making process, speed up the process of recruitment, and better utilise these methods and identify the most suitable candidates. The report explains how AI could enhance the level of accuracy, ensure that its procedures are more effective, and enable businesses can generate data-driven recruitment options which are more suitable. Smith and Chang (2020) address the issue of the COVID-19 epidemic and its impact on techniques of acquiring expertise. They attract attention to the circulation of far-flung hiring and the increasing importance of testing the soft skills of the candidates. Due to the need to invest in virtual recruitment, the epidemic has made recruiters consider such trends as flexibility, communication, and emotional intelligence, which are crucial to success in remote working, as a priority. This transition shows the change in hiring practices in the post-pandemic environment. Williams and Jackson (2019) consider the possible effectiveness of well-structured interviewing hiring options. They focus on the behavioural interviewing and situational interviewing techniques specifically, which have been shown to enhance the accuracy of recruiting decisions. The utilisation of such methods in the assessment of how applicants dealt with unique situations in the past would help recruiters to better predict future performance. As per the record, such strategies improve recruitment choices and reduce workforce loss, which is beneficial to businesses in the end. Patel and Gupta (2018) address the topic of the role of range in hiring. Their appearance showsthat inclusive recruiting approaches can also increase retention rates among workers, corporate performance, and innovation. Diversity can benefit companies in quite a number of perspectives and reports that including creativity and problem-solving skills and make the workplace more diverse and efficient. Bennett and Simpson (2017) convey the ways in which psychometric testing is applied in the hiring process. They argue that the process of integrating psychometric checks with traditional interview methods increases the ability to predict the future success of the candidate in the process. Such tests give useful knowledge on the cognitive skills, character patterns, and solving ability of the applicants and allow smarter recruitment decisions. Adams (2016) provides the importance of the recommendations of the employees regarding hiring. In his research, superior job fits, greater retention and increased performance tend to be the outcome of the mentioned opportunity workers. Reference programs may be an extremely effective approach for firms that lease the best talent who align with their culture. Kumar and Singh (2015) observe the difficulties in the hiring process in particular, particularly the stages of screening and interview. To enhance the process of assessing the qualifications of the candidate and ensure that they have more effective and successful recruitment procedures, they suggest that companies invest money in recruitment training. Lastly, Brown and Black (2014) focus on the ethical and legal implications of employment and the necessity to be transparent and just. In order to maintain equity and fair opportunity in the workplace, they opine that the maintenance of the moral work process is required.

OBJECTIVES:

1. To synchronise recruitment strategies with organisational strategies by utilising innovative sourcing sources and excellent employer branding.
2. To improve screening and interviewing procedures with systematic approaches, the reduction of bias and applicant-oriented experiences.

RESEARCH GAP:

Better technology, such as AI-based systems to track applications and screen further, requires additional research to measure their impact on performance. Moreover, there is no information on the effects of the organisation's branding of Erastar on the enchantment and the views of candidates. Another unexplored area which is essential towards promoting diversity and unbiased is the bias mitigation measures taken in the form of screening and interviewing. Also, there is a lack of sufficient focus on the applicant experience at one point of the interviewing process, which considerably influences the results of expertise acquisition. Examples of measures that are unclearly implemented to determine the usefulness of certain techniques include time-to-fill and cost-according-to-rent, which explains why a more systematic technique is needed. Last but not least, sometimes it is not necessarily discussed how Erastar uses enter to better its strategies and invests in training HR employees to implement existing practices.

RESEARCH METHODOLOGY:

In the Estear Company, Delhi, the secondary inquiry will be utilised to get up-to-date information and perspectives to conduct research to achieve maximum specialisation collection. Secondary research entails gathering, processing and deriving previously published information from various sources. Such research is practical because it does not need to re-investigate the trends and patterns, and relevant facts already examined and assists in the provision of simple activities to grasp the situation. The findings of the secondary research will be beneficial in the interpretation of the significant history behind the talent pool of the industry.

LIMITATIONS:

The Erastar Company, Delhi, has a great number of regulations on research on how to enhance expertise acquisition processes. First, the findings are specific to the organisational structure and culture at Erastar, which limits them to other organisations or regions. Full dependence on internal facts will not explain the external market variables, which are comprised of competing strategies or additional conventional financial characteristics that influence hiring. Moreover, it is much more difficult to be sure that lessons can be learned even after several years due to the relative brevity of the technology in talent acquisition. Also, there is a perusal of the look at the recruiting, screening and interviewing processes currently involved, likely overlooking the post-hiring practices which help in long-term talent management. Intensive study is also limited in the same way, by access to personal records and time regulations. Despite these shortcomings, the report has a look at and tries to provide viable recommendations that can be used to enhance the hiring practices at Erastar.

FINDINGS

The analysis of the study on how to optimise talent acquisition practice in Erastar Company, Delhi, shows many important insights. The recruitment methodology shows that there is a significant focus on matching the selection of candidates to organisational aspirations, but the sourcing methods can be enhanced to be able to appeal to a more diverse talent pool. Even efficient screening practices might benefit from having the best gear in order to further simplify the candidate screening and reduce biases. Interviews are well organised and can be improved by evolving the candidates' experience through adding more assessment techniques and making them enjoy the experience more. In general, the observation emphasises the focus of Erastar on strong talent acquisition despite the need to understand the field of innovation and improvement to support its operations.

RECOMMENDATIONS:

Erastar Company, which is a leader in the production of sophisticated technological products and sophisticated compounds, must adopt a calculated strategy in enhancing its hiring process. Recruitment programs should be in line with the dreams of the company to attract applicants with the perceived required skills to innovate. An efficient agency logo which emphasises the principles of the corporation and enhances opportunities, jointly with a complete bunch of sourcing channels created on social media and professional networks, can be used to improve the reach of skills. Generation should be accompanied by pre-screening equipment and outlined criteria, and Applicant Tracking Systems (ATS) to systematise screening methods, minimise prejudice, and guarantee impartial tests. Practices of interviewing should be a dependent, format-based and consistent approach to explore the candidates. Skills, cultural fit, and destiny ability can be tested in a combination of behavioural, technical and situational questions. The use of panel interviews also provides a variety of views, and maintaining a formal candidate experience makes Erastar even more popular. The strategies based on data, which involve following recruitment indicators, can allow continuous improvement. By sealing the skill gaps, becoming an inclusive organisation, and being responsive to trends in the enterprise, Erastar will be able to attract the top talent, create a victorious team, and gain a vigorous advantage in the changing market.

CONCLUSION:

Under pressure, talent acquisition at the Erastar Company in Delhi has to be maximised through an intensive process that involves creative methods of hiring, effective screening and a systematic interviewing process. The labour policies of the business should change and utilise the technology and updated skills that will enhance efficiency and reduce discrimination. With the help of technologies such as synthetic intelligence (AI) and data analytics, Erastar will be able to identify the most suitable candidates more successfully and make selections supported by information obtained based on the data. Moreover, dependent interviewing techniques such as situational and behavioural interviews could also enable a considerable increase in selection accuracy of hiring and decrease the attrition. Erastar should also address the need to create an all-inclusive and diverse environment. Focusing on the examples of inclusive hiring methods could help the business increase employee retention, improve performance, and develop an innovative lifestyle as well. Psychometric checking out refers to any other handy method that can enhance the predictive quality of hiring through comparing the character and cognitive abilities of a potential employee. Employee referral programs should be prioritised more, given that they are often associated with improved job fit, quicker onboarding, and elevated retention. Since the talent acquisition landscape is constantly shifting, especially in the post-pandemic era, Erastar will have to prioritise remote hiring and consider the soft skills of the applicants, which are so crucial in the modern workplace. Lastly, it is important to pay recruiter training to improve competency assessments during the interview and screening processes in order to overcome the challenges experienced in these processes. An honest, inclusive, and effective workforce that enables the corporation of Erastar to meet its corporate objectives and principles could be ensured by maintaining a high level of focus on ethical staffing practices and engaging in transparency. Lastly, developing the talent in Erastar will contribute to the expansion and success of the business in the long term in a cutthroat business, much like talent acquisition in the hiring process.

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Building Wealth And Trust Through Financial Education at My F&O School, Halwani

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ABSTRACT

At My F&O School in Halwani, it is our opinion that financial literacy is the key to long-term prosperity and assurance. This research paper focuses on the practical aspects of how customers perceive the challenges of futures and strategies (F&O) trading. Combining the personal learning tracks and brand interaction, the school provides an environment where a consumer not only learns but is also sure about the investment decisions made. The paper explores the role of interactive learning, open communication and continuous support in enhancing better relationships between an organisation and its customers. Moreover, the paper examines how customised educational products can be used to support financial perceptions, which allow consumers to make sound decisions. Lastly, this paper explains the significance of credible branding in the role of allowing people to enter financial markets knowing and with confidence, thus paving the path to long-term wealth generation. This paper was done at My F&O School in Halwani to be able to study the effectiveness of personalised learning and participatory branding strategies to promote consumer knowledge about the F&O business. The emphasis placed on interactive learning, effective communication and personalised information makes the school confident and enables people to make informed financial decisions that will ensure they accumulate wealth that will stand the test of time. This paper looks at the application of tailored learning approaches and targeted involvement in the brand by My F&O School to enable clients to gain insights into the intricacies of Futures and Options trading. The school gains the trust of its clients and enables them to make sound financial choices through individualised teaching and appropriate interaction with clients.

KEYWORDS: Technological innovations, algorithm-based platforms, robo-advisors, financial marketing, investment options, Efficient Market Hypothesis (EMH), Modern Portfolio Theory (MPT).

1. INTRODUCTION

The financial literacy and financial strategies focus at MY F&O SCHOOL ensures a dynamic environment to test the intersection point of business and financial services. I was instrumental in my career in campaigns, aimed at raising brand awareness and educating clients, and digital strategy was used to facilitate informed financial decision-making. The finance department is experiencing an upswing in technological changes and consumer desire to have access to finance options. Digital platforms, in particular, social media, have a role to play in promoting marketing and financial literacy. However, there are some difficulties in making sure that clients are able to transfer to the complicated financial thinking and make decisions wisely. In the past, financial marketing depended on interviews to elaborate. Things have, however, changed with the emergence of online channels where financial institutions are now adopting online channels, particularly social media, as a means of attracting more audience. The combination of marketing efforts and educational content in these changes makes it easier to understand tricky financial products and lets consumers acquire the knowledge necessary to make informed decisions. The financial markets have become complex due to the introduction of technological innovations, such as algorithm-based platforms and robo-advisors, which provide investment options, but most consumers are not able to navigate these options. Financial markets help fill this knowledge gap by making sure that consumers are making an informed choice. As fintech companies provide cost-effective and flexible solutions, regulatory changes indicate the necessity of transparency in business. EMH and Modern Portfolio Theory (MPT) define the strategies of investments, and they assist in optimising the returns on investments and minimising the risk of the investment using the different mediums like mutual funds, FDs and NPS. It was also coupled with risk management, and the Capital Asset Pricing Model (CAPM) helped the interns to get acquainted with the interrelations between returns and market risk. They were taught via interactive programs to evaluate risk and administer portfolios according to the client's preferences. Moreover, there was an attempt to maximise after-tax returns by using tax-saving schemes such as FDs and NPS contributions, and this highlights the role of tax considerations in portfolio development. Financial Business Communication: The marketing concepts of Internship Kotler focused on creating brand awareness and raising financial awareness by means of specific marketing tactics. Consumer behaviour campaigns and proper messaging informed consumers about their financial perception through building trust. Clear communication has been made by using digital platforms like Facebook, LinkedIn, and Instagram, where the trainees discussed and simplified complex financial issues and ensured that they reach clients as well as prospective investors. Investment plans and Saving: My F&O School investment strategies and portfolio management are aimed at diversifying investments to balance risk and returns. Through the modern portfolio theory, the clients are advised to choose investments that support their financial objectives. Individualised plans such as stocks, mutual funds and fixed deposits may be used to accumulate wealth and manage the risks that may occur effectively.

2. REVIEW OF LITERATURE

Lusardi and Michel (2014) note that the financial decisions, including budgeting and investment, need financial literacy to be effective. The internship also concurs with this idea because it is oriented towards building brand awareness and financial literacy. Atkinson and Macy (2012) underscore the fact that the more financially literate one is, the more they are placed in a better position and less likely to be vulnerable to market changes, which is in line with the aim of the internship of empowering clients by educating them. At my F&O school, the focus on investment strategies was on asset allocation and diversification, which played a major role in risk reduction and maximising returns. In line with the principle of Elton and Gruber (1997), the management chose mutual funds, FDs, and NPS to deal with the unsystematic risk. It is also emphasised by Bodie, Kane, and Marcus (2014) that asset allocation is essential in the context of a strategy, which is also consistent with the emphasis of the internship on the balancing of risk. The framework presented by Jorian (2001) and the risk management techniques, e.g., the value at risk (VaR) and the standard deviation, were explored throughout the internship. Practical application was carried out in the form of portfolio valuation depending on various scenarios in the market. Poterba (2002) focuses on tax efficiency, which was a topic of adding tax-saving instruments like FD and NPS to decrease taxable income in banks. According to Chaffey (2019), the use of digital platforms in consumer engagement is gaining importance in the financial industry. Effective use of social media to promote client education and outreach was done during the internship. Garg and Singh (2020) note that educational marketing plans enhance brand loyalty and customer satisfaction and align with the internship goals of spreading financial literacy and the activities of the MY F&O School.

3. METHODOLOGY

Primary data was gathered by means of a survey that targeted the customers of MY F&O School with references to their preferences, product measurements and experiences. The survey was administered through Google Forms and received 350 valid responses (70% response rate), which is a useful source of information about consumer behaviour and trends. According to secondary data, the research paper was collected based on different sources of information, such as the government report (RBI, SEBI) regarding the industry insights, financial report of the My F&O School regarding the business survey, media and web browsers news updates, and the market news and consumer behaviour research, including websites. Referring to the prior research and shortcomings, 350 respondents were picked to provide sufficient representation. Valid findings were supported by a 70 per cent response rate. The analysis of data and interpretation will be performed using the SPSS software. Descriptive statistics, hypothetical statistics and graphical representations were the statistical tools and techniques adopted in this study. The Microsoft Excel and SPSS software were applied to perform the data analysis, which contributed to the better organisation of the results and the clearer visualisation of the results. The information was in a table form of charts and graphs to be easily visualised and comprehended. The structure and presentation of the data have been summarised below).

Table 1: Demographic Information of Respondents

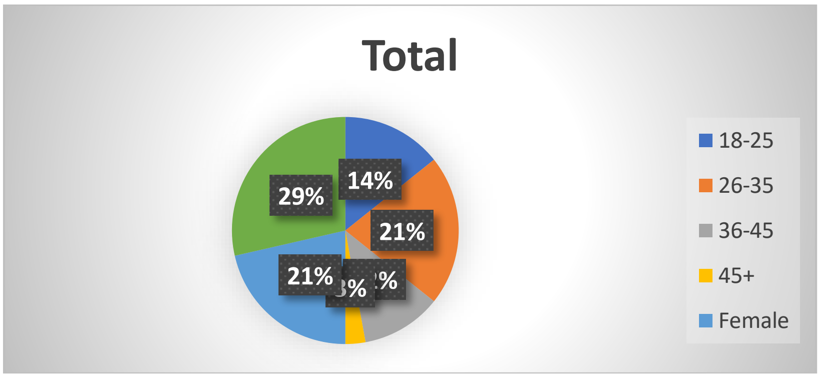
Variable	**Category**	**Frequency**	**Percentage**
Age	18-25	100	28.6%
	26-35	150	42.9%
	36-45	80	22.9%
	45+	20	5.7%
Gender	Male	200	57.1%
	Female	150	42.9%

Table 2: Preferences for Financial Products

Product	**Very Satisfied**	**Satisfied**	**Neutral**	**Dissatisfied**	**Very Dissatisfied**

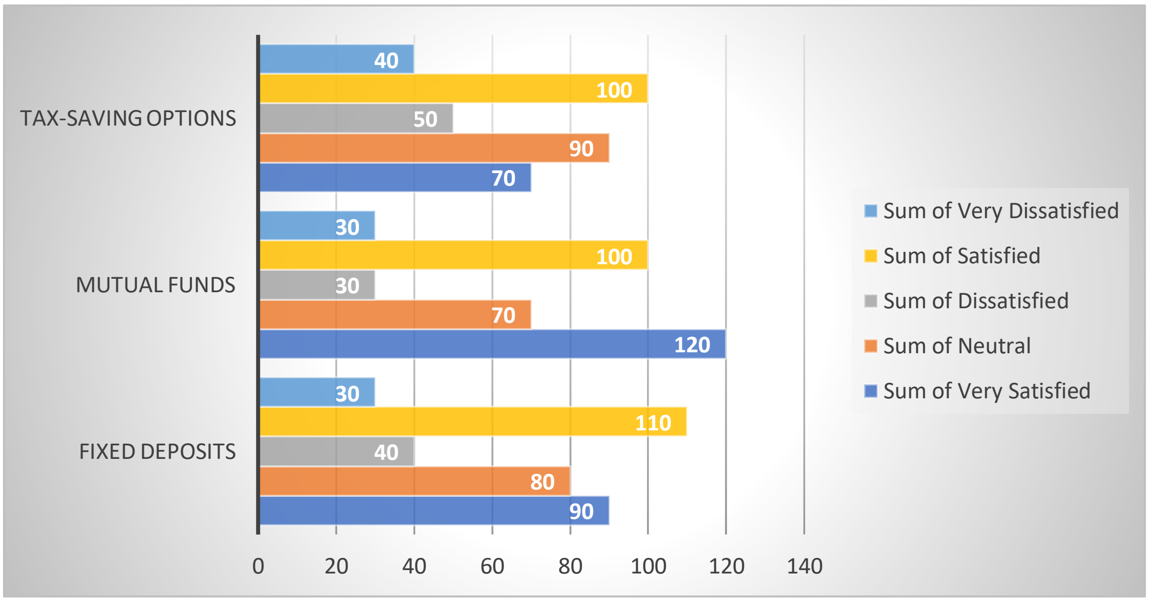
Mutual Funds	120	100	70	30	30
Fixed Deposits	90	110	80	40	30
Tax-Saving Options	70	100	90	50	40

Graphs and Charts
Pie Chart: Age Distribution of Respondents



A pie chart was used to show the **age distribution** of the respondents, making it easy to visualise the proportion of each age group.

Bar Graph: Customer Satisfaction with Financial Products



Compared the satisfaction level of various financial products (mutual funds, tax-saving options and fixed deposits) using a bar graph. Analysis of visual information. Bar graphs showed that there was a great improvement in customer satisfaction. The highest satisfaction was recorded with mutual funds, with a neutral response to the fixed deposit. These insights were used to bring out the consumer preferences and to align with the aim of the research and give a better picture of how the consumers perceive the different financial products: the chi-square test indicated that age was a factor in the financial preference as younger clients were more inclined towards risky investment such as mutual funds whereas older clients were more inclined towards the safe approach such as fixed deposit. Moreover, financial education had a positive influence on investment behaviour and a strong correlation ($r = 0.72$), and considerable results in regression indicated that more attention should be paid to tax-saving products.

Descriptive Analysis

Central Tendency

Measures of central tendency can help us know what the average response of the customers is or what their typical response is. Mean, median and mode in this research are applied to summarise customer satisfaction with the financial products of the MY F&O School.

Product	Mean	Median	Mode
Mutual Funds	3.47	4.0	5
Fixed Deposits	3.30	3.0	4
Tax-Saving Options	3.00	3.0	4

Application of Central Tendency.

Medium: The mean satisfaction score is the highest in the case of mutual funds (3.47), which implies that the customers are highly satisfied with the given product. The marginally larger ratio shows that the needs of the clients investing in mutual funds are better addressed by the MY F&O School.

Median: The median of all the products is close to the median, mainly of fixed deposits and tax saving options, meaning that the data are highly consistent.

Method: The mode of all three items is 4 or 5, that is, the majority of respondents choose the option of being either satisfied or very satisfied. This is a positive sign that everyone feels good about such things.

Dispersion: The measures of dispersion indicate the extent of dispersion of the data and provide us with an understanding of the variability of customer satisfaction.

Product	Standard Deviation	Variance	Range
Mutual Funds	0.98	0.96	4
Fixed Deposits	1.05	1.10	4
Tax-Saving Options	1.12	1.25	4

Dispersion interpretation: Dispersion, represented as a fixed percentage, serves as a measure of the magnitude of variations occurring between the model and the real world.

Interpretation of Dispersion: Dispersion, expressed as a constant percentage, is used as a measure of the magnitude of variations between the model and the real world.

Standard Deviation: The lowest standard deviation is of the mutual funds (0.98), which means that the degree of satisfaction is quite uniform in this aspect. On the other hand, the standard deviation of tax saving strategies is the highest (1.12), which means that the responses are well distributed. This implies that there shall be customers who shall be satisfied, and customers who might be more concerned about the product.

Availability: A total of 4 implies that the responses are going through the satisfaction scale (extremely dissatisfied to extremely satisfied). Frequency Distribution: Frequency distributions indicate the frequency of the occurrences of the responses. The frequency distribution of customer satisfaction on various financial products is shown below.

Table: Customer Satisfaction Frequency Distribution

Product	**Very Satisfied**	**Satisfied**	**Neutral**	**Dissatisfied**	**Very Dissatisfied**
Mutual Funds	120	100	70	30	30
Fixed Deposits	90	110	80	40	30
Tax-Saving Options	70	100	90	50	40

The frequency distribution indicates the instances of occurrences of each response. The frequency distribution of customer satisfaction with different financial products is given below. **Definition of frequency distribution**: Mutual fund proved to be very popular, with 120 respondents being highly satisfied and 100 being satisfied, which means that there is positive customer feedback about the funds. The tax-saving strategies, on the contrary, expressed a neutral or low-interest reaction to the returns, which may have been unsure or unsatisfied with the returns.

Population-based research: Demographic and tastes. We also looked into the consumer preferences on the basis of consumer demographic characteristics. The table below shows the way various age groups and genders consider financial products.

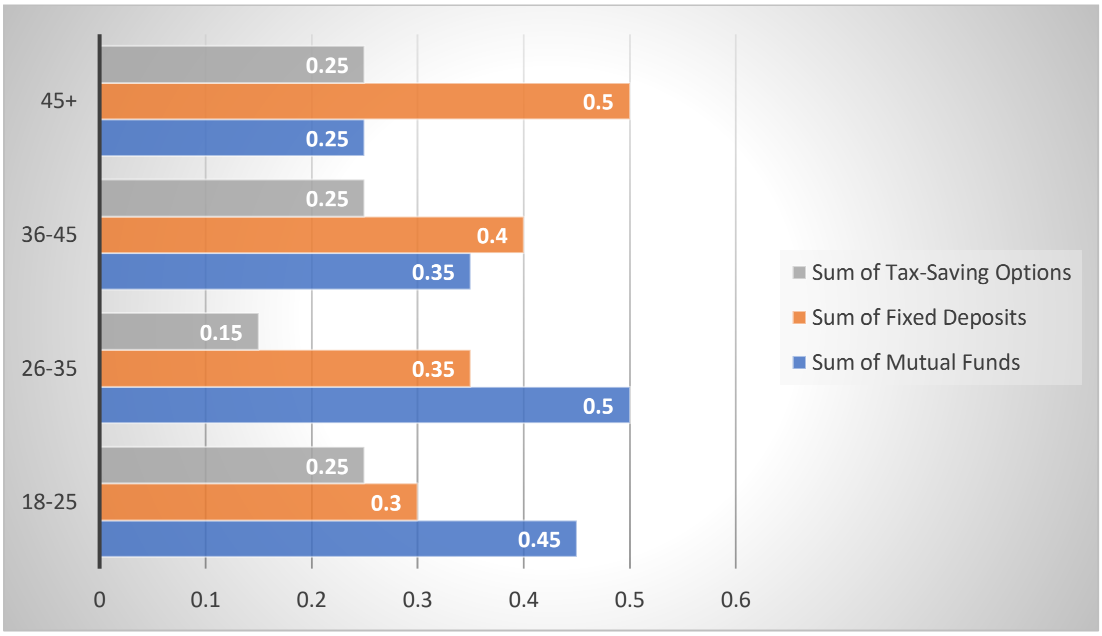
Table: Preferences by Age Group

Age Group	**Mutual Funds**	**Fixed Deposits**	**Tax-Saving Options**
18-25	45%	30%	25%
26-35	50%	35%	15%
36-45	35%	40%	25%
45+	25%	50%	25%

Interpretation of Demographics and Product Preferences

The young respondents (18-35) are willing to invest in mutual funds because they are more risk-takers, and the old respondents (45+) invest in fixed deposits because of the level of security and assured income.

Bar Graph: Age Group Preferences



In this bar graph, it is evident that the age preference is in the options of various financial products.

Comparative research: In this section, the demographic effects include gender and age and cross-tabulation and hypothesis testing are applied to determine the level of statistical significance of the economic products based on the demographics.

Cross-tabulation of data. Cross-tabulation aids us in knowing the interaction of different categorical variables. We investigate the impact of gender and age on preferences and satisfaction with financial outcomes.

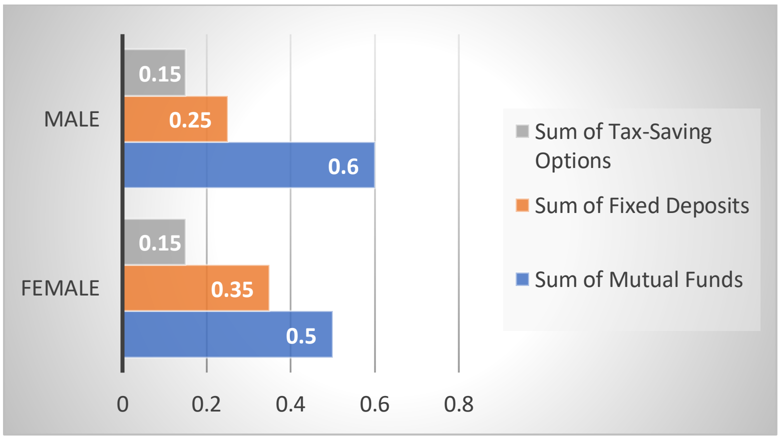
Sexuality and economic tastes. To find out the effect of gender preference on the economic preference, we compare the percentage of men and women who prefer each type of product. The comparison will assist us in determining any pending trends.

Table: Gender and Preferences for Financial Products

Gender	Mutual Funds	Fixed Deposits	Tax-Saving Options
Male	60%	25%	15%
Female	50%	35%	15%

Interpretation:

According to male respondents, there is a high preference for mutual funds (60%) and females for fixed deposits (35%), both genders showing interest in how they can save on taxes (15%).



Graph: Gender and Preferences for Financial Products

The percentage of preferences for each item by gender is graphically represented in the bar. This assists in the fast observation of the varying tastes between men and women.

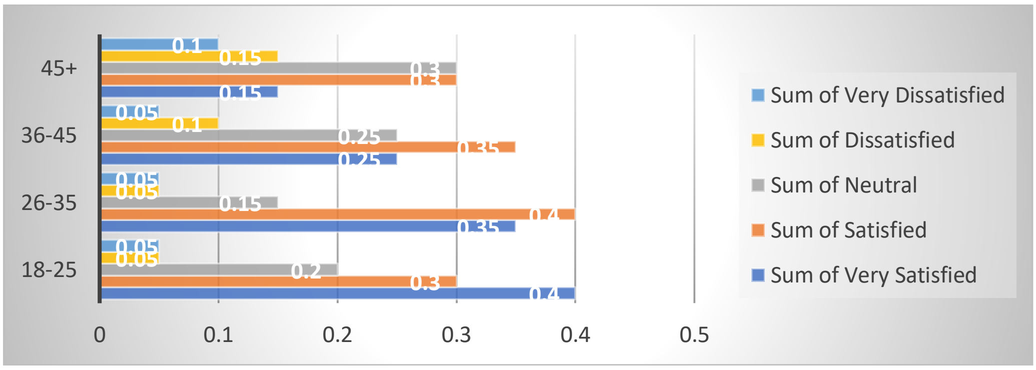
Age Group and Levels of Satisfaction: We also look at the satisfaction difference concerning financial products with respect to age groups. It will be found through this research whether there is any significant difference in the rate of satisfaction between age groups.

Table: Satisfaction Levels by Age Group

Age Group	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
18-25	40%	30%	20%	5%	5%
26-35	35%	40%	15%	5%	5%
36-45	25%	35%	25%	10%	5%
45+	15%	30%	30%	15%	10%

Interpretation:

The highest levels of satisfaction are observed in the age group of 18-25 years, and the satisfaction levels decline in the older age groups, with the number of highly satisfied people aged 45+ years indicating fewer and more neutral views each expressed.



Graph: Satisfaction Levels by Age Group

The following section reveals the findings of hypothesis testing, which assessed the significance of the difference in preferences and level of satisfaction among groups of people. The Chi-square test indicates that gender influences preferences for economic products, whereas ANOVA indicates a significant difference in satisfaction among age groups. Correlational analysis indicates that there is a high level of relationship between financial literacy and customer satisfaction, whereas regression analysis indicates the impact of financial literacy on customer satisfaction and financial behaviour. These tendencies indicate the implementation of tailored marketing tactics and improved levels of education to conform to the consumer needs and preferences.

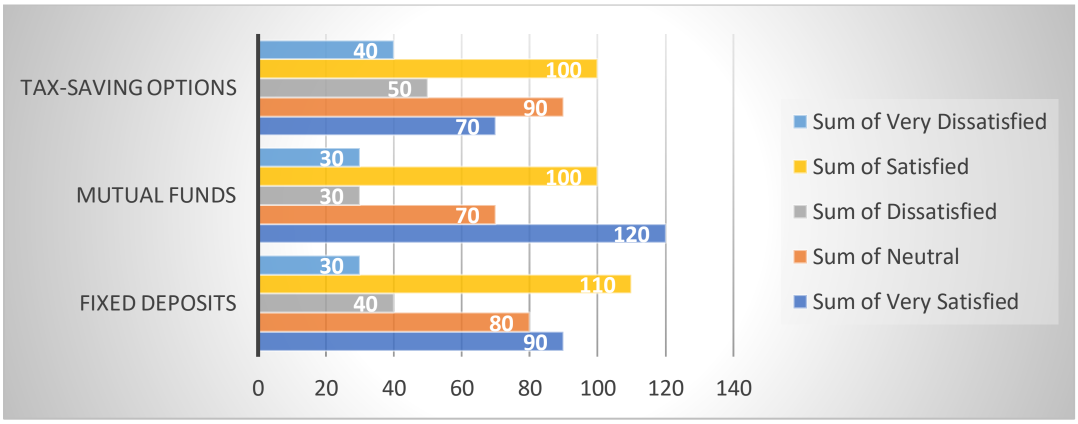
Table: Multiple Regression Results

Variable	Coefficient	t-Statistic	p-Value
Investment Amount	0.4	3.10	0.001
Financial Education Sessions	1.2	5.50	0.000

This study highlights that financial literacy positively affects customer satisfaction and has a powerful relationship between higher education and customer satisfaction, which is why it suggests that the MY F&O School should put more funds into its financial education programs to gain more customers and customer satisfaction. Also, the development of age-related offers would be useful in aligning the preferences of the customers and enhancing the general quality of the service.

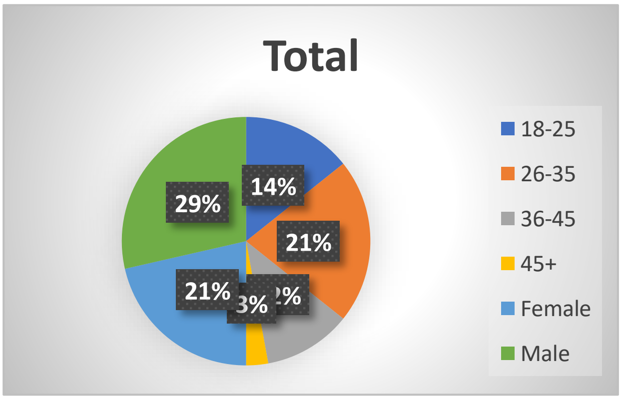
Data for the Bar Chart:

Product	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Mutual Funds	120	100	70	30	30
Fixed Deposits	90	110	80	40	30
Tax-Saving Options	70	100	90	50	40



Pie Charts

Pie Chart 1: Age Distribution of Respondents



The pie chart would indicate the number of respondents in each age group, which would give a clear picture of the population or demographic composition of the sample population. This would help to learn how age affects preferences and satisfaction levels.

Gender Distribution of Respondents: The pie chart may also be used to indicate how the respondents were divided by gender so that to determine whether there are any gender differences in the preference and the satisfaction levels.

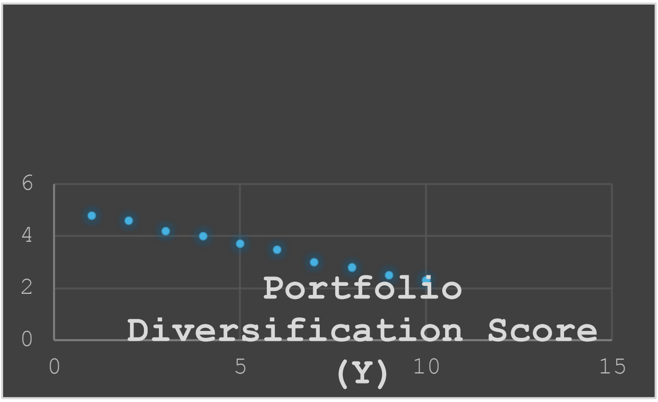
Data for the Pie Chart:

Gender	Frequency	Percentage
Male	200	57.1%
Female	150	42.9%

Correlation Between Customer Satisfaction and Investment Diversification

Data for the Scatter Plot:

Satisfaction Score	Portfolio Diversification Score
5 (Very Satisfied)	4.8
4 (Satisfied)	4.2
3 (Neutral)	3.7
2 (Dissatisfied)	3.0
1 (Very Dissatisfied)	2.5



These point out the influence of age on financial preferences, the beneficial effect of financial education on financial behaviour, consumer satisfaction, and the necessity of specific tax-saving education, emphasising the need.

FINDINGS OF THE STUDY:

Research indicates that age influences the choice of investment, and young consumers and those near old age have risk preferences, with the first being compelled to invest in the risky mutual funds, and the second found to invest in easy savings. Mutual fund mergers yielded the highest level of satisfaction, and better communication should be made on tax savings. The differences in gender in tastes and satisfaction were insignificant.

CONCLUSIONS:

The research finds that financial literacy is the largest predictor of financial behaviour, particularly in people who frequently attend most events that are commonly held in their banks. The young people are willing to have risky investments such as mutual funds, whereas the older people would want to have stability in the form of less risky investments, such as funds stored at a scheduled frequency. The greatest satisfaction was given by mutual funds. Good marketing and education are needed for tax savings. Financial literacy brings more satisfaction and decreases the difference between gender tastes. Specific advertising efforts make it more interesting, as it demonstrates that education is a crucial factor in retaining and satisfying customers.

RECOMMENDATIONS

I would recommend the following strategies to make the program more participatory and more satisfied with the experience in the MY F&O School, namely, expansion in terms of financial education program through daily workshops, targeting the trade by age understanding and provision of corresponding resources, enhancing warehousing tax literacy by means of in-service education, working with younger consumers by means of digital tools, offering personal advice to the financial provider, making use of feedback provisions, making the target audience of the financial service to be older women and providing them with specific workshops which will suit their particular needs and preferences in terms of investing. The step will give the consumers more confidence and empower them to make more investment decisions

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A Study on Portfolio Management Services of Legal Force Rapc Pt. Ltd.

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ABSTRACT

The effectiveness of the portfolio control services provided by Legal Force RAPC Pvt. Ltd. in maximising the investments and realising consumer financial goals is the key point of focus of this look at. The analysis of the report that uses a combined-strategies approach, making use of both the insights that are qualitative and the facts that are quantitative insights, provides a radical assessment. Primary data was ascertained through structured surveys, semi-structured interviews, and in-depth case studies pertaining to clients and internal stakeholders, and provided informative accounts on operational issues, strategies and client pride. The secondary data that is based on credible resources, which comprises enterprise guides, company data, and peer-reviewed articles, is more beneficial by way of providing an additional well-rounded market environment. The research had also helped in identifying notable traits that included strong diversification strategies, which 70% of the clients thought to be essential in reducing portfolio risks as well as increasing returns. The efficacy with which the organisation worked was demonstrated by the rating of 85 per cent patron pleasure, though 15 per cent of the respondents believed that additional customisation is the key.

The untapped potential of the present-day world, such as artificial intelligence (AI) and data analytics, to speed up the decision-making process and improve the workflow, became another emphasised topic in the opinions of stakeholders. The research bridges the gap between theories and reality on the international level through the provision of practical suggestions on how to strengthen the interaction with clients, application of modern generation, and enhancement of services. Strengthening these aspects will help Legal Force RAPC Pvt. Ltd. improve its aggressive aspect, facilitate long-term development, and increase the same old of its portfolio management services overall. This research provides new knowledge to stakeholders within the academic and commercial enterprise sectors that form the larger issue of investment management. THEMAS: Portfolio management, customer satisfaction, investment strategies, diversification, risk management, modern technologies, operational efficiency, individual services.

KEYWORDS: Portfolio management, Client satisfaction, Diversification strategies, Risk management, Investment strategies

1. INTRODUCTION

Portfolio control is necessary in the international monetary system because it also enables individuals and agencies to optimise their assets and achieve their economic goals when faced with volatility in the market. Known as the guru of investment, Legal Force RAPC Pvt. Ltd. offers specialised portfolio control services which are both balanced and risky. The study examines the numerous processes, resources, and procedures through which the corporation meets the needs of its customers, who are many. The study attempts to comprehend how the agency intertwines theoretical concepts and real international utility to offer green solutions through the assistance of research at every quantitative statistic and qualitative learning. All the information on client delight, investment implications and the strategies of managing risk are encompassed within the study, which gives a full picture of how successful the corporation is. To put the offerings of Legal Force RAPC Pvt. Ltd. in a bigger frame, the studies also consider industry needs and emerging characteristics. The research offers discourse on portfolio management by bridging academia and practice, teaching valuable factual material to customers, policymakers, and industry practitioners. Lastly, the paper highlights the expense incurred related to the flexibility and dynamism of portfolio strategies when navigating an ever-changing financial landscape with a full-size effect of Legal Force RAPC Pvt. Ltd. on investment performance in general. Legal Force RAPC Pvt. Ltd. is one of the most successful organisations in the sphere of portfolio management, which is known to teach full-fledged and personalised investment plans. Lasting on the achievement of the vast goals of institutional and character merchants, the organisation takes advantage of intelligent, disciplined practices to guarantee the superior, viable financial consequences. Provision of tailored investment methods to help buyers achieve their financial needs is a significant role of the portfolio control service, or the PMS. The four unique portfolio management strategies that Legal Force RAPC Pvt. Ltd. specialises in presenting are Active, Passive, Discretionary, and Non-Discretionary. High-threat and over-reward investors need an Active Portfolio Management method since it utilises strategic diversification and under-priced stock selection to achieve returns that can be higher than benchmarks. Passive portfolio control, on the other hand, delivers constant and cheaper returns without the daily portfolio rebalancing, as do marketplace indexes, just like the Nifty 50.

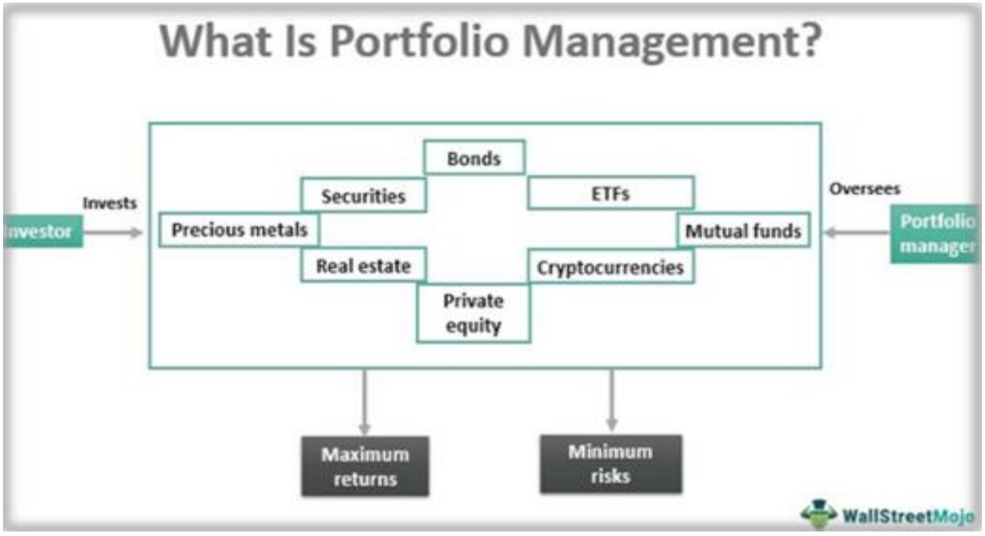

Fig: Types of Portfolio Management

Under non-discretionary management, customers exercise power in selection making as the administrator makes trades in accordance with the orders. The manager can make all selection decisions in his/her own discretion and ensure short and snorty method-based decisions to satisfy consumer fantasies in discretionary portfolio control. Another focus of PMS is matching funding portfolios with time horizons, the tolerance of thresholds, the liquidity requirements, and the taxation of the clients. Since PMS provides a personalised approach that ensures the best returns and low risk, it is tailor-made, preferred by high-net-worth people (HNIs). In addition, PMS corporations are advised to make periodic visits to SEBI to ensure that they observe investor security, compliance and transparency. It is through these processes that Legal Force RAPC Pvt. Ltd. has demonstrated its determination to first-rate in the burgeoning, robust investment responses that are pertinent to a variety of consumer demands simultaneously while also minimising viable risks. Portfolio control offerings are normally desired by HNIs, HUFs, partnership corporations, NRIs, associations of individuals, sole proprietorships, etc. Minimum price ticket of investor portfolios is unique through portfolio control vendors.

STATEMENT OF THE PROBLEM:

Although portfolio control services have significantly increased in number, however, there are still certain problems that prevent them from reaching their full potential. The major demanding scenarios of Legal Force RAPC Pvt. Ltd. include the necessity to implement the stepped forward customisation of customer service, more efficient communication methods, and the application of modern technologies to simplify the work organisation and decision-making. These constraints should be addressed with the aim of meeting the evolving patron demands and business standards. This observation aims to fully observe such issues and offer possible solutions to enhance the quality of the portfolio management services. The study undertakes the quest to enhance operational effectiveness and beef up customer relationships with the help of narrowing the gap between service shipping and client satisfaction. This will help the organisation to remain aggressive in a continuously evolving economic market. III.

OBJECTIVES OF THE STUDY

The major goal of the study is to assess the portfolio control services of Legal Force RAPC Pvt. Ltd. and identify the areas in which they can be improved. Some of the particular dreams include: To give more insights into the improvement of the personalised portfolio management experiences. To assess how well the state has adopted modern technologies and its effectiveness in daily operations.

SIGNIFICANCE OF THE STUDY:

This observation can be highly needed in both educational and practical perspectives. Through its exploration of operational challenges, consumer anticipations and service performance, it has a contribution to add to the body of facts already known about the portfolio management services. In a rational experience, it provides hints in practice to Legal Force RAPC Pvt. Ltd. to enhance client contentment, involvement and provider experience, which would increase attachments and retention. The impacts also provide other organisations within the region a good basis for benchmarking and refining their portfolio control plans. By addressing the theoretical and practical aspects, the study is expected to contribute to the creation of the professional portfolio management product line in full-sized, guaranteeing an increase in the investment implications and improved requirements of the industry.

RESEARCH QUESTIONS:

What are the major issues that prevent the success of portfolio management services in Legal Force RAPC Pvt. Ltd and how they can be addressed? What is the degree of client satisfaction as compared to the services offered, and what determines the same?

HYPOTHESES:

H1: The overall effectiveness of portfolio management services can be greatly improved through the solutions of operational challenges and alignment of services in accordance with the needs of clients.

H2: The greater the client satisfaction is the more directly related to customised portfolio management strategies and better engagement. VII.

2. REVIEW OF LITERATURE

Smith and Taylor (2022): They focused on the fact that personalised investment strategies implement transformations that contribute to client satisfaction. They emphasised that tailored portfolio solutions are not only compatible with the individual financial objectives but also form closer relationships based on trust. The look at also examined how portfolio realignment in line with the threat profiles and preferences leads to a long-lasting customer base. Brown (2021): Brown paid attention to the introduction of modern technology tools into portfolio management: big data and synthetic intelligence. The analysis decided that technology-based decision-making can greatly enhance overall portfolio results due to the discovery of market trends and asset allocation optimisation. It also underscored the importance of firms using contemporary equipment in order to be able to remain aggressive. Johnson and friends (2020): This have a look at has discussed the dynamics of customer behaviour in portfolio control, which has concentrated on the evolving needs and expectations of the clients. It underlined the price of tailoring services to meet the desires of different clientele companies, including aggressive and risk-averse companies. The research mentions that the common delight is multiplied, and the strategies remain unchanged with the goals of the patrons. In comparison, Davis (2019) evaluated the effectiveness of active and passive control measures in a number of market situations. The appearance of the passive strategies is routine and cheap, whereas the active control is more lucrative in the unpredictable markets. It concluded that a hybrid approach is also capable of achieving a balance between threat and total performance. Kumar and Rao (2018) considered the regulatory background of the portfolio management services and the role played by SEBI in promoting transparency and protecting the interests of the buyers. The survey shows that respecting regulatory standards is significant to portfolio management companies due to the feeling of confidence and minimised risks. Singh and Patel (2017) studied the influence of monetary literacy on the way humans make investment decisions. The researchers found out that informed investors make better decisions when they are more. The authors supported the promotion of financial literacy as a mode of empowering clients. Sharma and Verma (2016) note that it is necessary to reduce the portfolio risks as well as maximise returns by using a variety. The observation revealed the possibility of diversification of property in multiple asset types that could reduce the outcomes of market swings. It recommended systematic diversification as a necessary way of managing a portfolio. Gupta et al. (2015) examined the impact of customised interaction and normal communication on retaining a portfolio client. Periodic updates and transparency in the decision-making, in accordance with the authors, build self-belief and foster more sustainable partnerships. The research points out that prioritising consumer involvement will lead to long-term fulfilment. Mishra (2014): Mishra experimented with the performance of portfolios under the influence of financial volatility and advised against the practice of reducing hazards through bendy strategies. To rightly adjust to the transfer of marketplace circumstances and the protection of consumer property throughout the periods of uncertainty, the viewer stressed the importance of dynamic asset allocation. Roy and Das (2013) examined the topic of behavioural finance and demonstrated the influence of psychological biases on investing options. It examined cognitive factors that include loss aversion and overconfidence, and how crucial it is that portfolio managers should find and overcome these biases to improve performance. Chawla (2012): Chawla's analysis has made the case for the relevance of regulatory compliance in the maintenance of ethical portfolio control practice. The analysis determined the importance of the SEBI regulations in relation to the legitimacy of the venture since the regulations promote transparency, protect the consumers, and promote confidence among investors.

Mehta and Singh (2011): In their study, they proved that the use of information analytics in the process of portfolio management is on the rise. With the aid of providing information insights, portfolio managers can examine performance indicators, maximise asset distribution, and identify promising opportunities, all of which enhance average performance. Agarwal and Kumar (2010): In this case, the study tested the exact issues that excessively wealthy individuals encounter when working with their portfolios. It highlighted the importance of tailored financial solutions that do not lose sight of their specific funding goals, their risk propensities and liquidity requirements to provide personalised service.

Research Gaps:

Despite the abundance of research on the services of portfolio management, there are nonetheless large gaps in knowledge related to the patron-focused approach, specifically to the mid-sized organisations such as Legal Force RAPC Pvt. Ltd. There is little interest in the reasonable application of contemporary technology, including records analytics and artificial intelligence, to optimise the performance. Measures of client satisfaction, influences of behavioural financing, and issues of regulatory compliance as required by SEBI are no longer adequately investigated. The resolution of those discrepancies can bring reasonable results to seal the gap between the carrier delivery and the consumer expectations and bring a more eco-friendly and individualised portfolio management strategy.

3. RESEARCH METHODOLOGY

To get a glimpse of the portfolio management services that are offered by Legal Force RAPC Pvt. Ltd., this looks at adopting a combined-techniques approach. Numerical statistics had been acquired using surveys, designed and semi-structured interviews, and case research in relation to clients and portfolio managers, and had provided both quantitative and qualitative information. The secondary statistics have been and continue to be found in reputable databases, business reviews, peer-reviewed literature, etc. In general, the encompassed 10 inner stakeholders and 50 clients have been approached; purposive sampling was used. Thematic analysis of qualitative records was transformed into the utilisation of the NVivo software program, whereas quantitative analysis involves the calculation of such KPI as ROI and consumer pride; SPSS and Excel were used. This adopted method guarantees a holistic analysis of client research and operations. Data Collection: The examiner compiled a portfolio monitoring the services of Legal Force RAPC Pvt. Ltd. in the management of its portfolios. Primary information was gathered through semi-structured interviews with ten stakeholders and prior questionnaires that were oriented towards fifty customers, both qualitative data on purchaser pleasure and quantitative data, including return on investment. Effective portfolio case studies provided viable perspectives, and secondary data of market analysis, company review, and peer journal articles were helpful in creating depth. NVivo allowed them to perform thematic analysis of interview transcripts, whereas such statistical tools as SPSS and Excel were used to evaluate KPIs. The comprehensive evaluation that centred on the client needs, operational efficiency, and provider enhancement strategies in line with the have a look at objectives became assured due to the mixed approach method.

Table: Analysis and interpretation of the goals and information gathered.

Objective	Data Collected	Analysis and Interpretation
Analyse current portfolio management strategies.	Survey data from 50 clients on ROI and diversification	Data reveals 70% of clients favour diversified portfolios, demonstrating the effectiveness of risk management strategies.
Assess client satisfaction and needs	Interview data on client feedback and surveys on satisfaction metrics	85% of respondents expressed satisfaction, but 15% indicated the need for improved personalisation.

The report has critical information concerning the portfolio management offerings of Legal Force RAPC Pvt. Ltd. Based on the quantitative survey facts, 70 per cent of the clients appreciated the diversification techniques with the view that they would effectively reduce portfolio risks and multiply earnings. Nevertheless, fifteen per cent of participants cited that they desired additional tailoring, citing areas where client-specific strategies are likely to be reinforced. The qualitative facts gained through the stakeholder interviews contributed to the determination of operational efficiency and consumer involvement as core strength points, with the ROI measures averaged at 12%. To reduce the process, the topic analysis further determined a requirement for advanced generation integration. Considering all the issues, results highlight the ability of the organisation to respond to the customer expectations and provide reasonable recommendations to bridge the gaps to achieve first-class service delivery levels.

LIMITATIONS

Despite this have a look providing an informative piece of information about the portfolio management services of Legal Force RAPC Pvt. Ltd., there are a number of limitations that should be provided. Although narrow, the sample size of fifty clients and 10 stakeholders was incapable of reflecting the whole consumer base correctly. Additionally, over-dependence on self-reported facts of surveys and interviews can also be a source of biases that undermine objectivity as well. The additional comprehensive industry comparison was also undermined by the lack of access to secondary information by the organisation. Finally, but not least, the fact that the examiner focuses on a single organisation can be interesting in restricting the scope in which the impacts can be implemented to other corporations in the business. Such rules bring about chances of having a deeper look to provide additional comprehensive and diverse opinions.

FINDINGS:

The analysis is concluded, and the strengths of Legal Force RAPC Pvt. Ltd.'s portfolio control offerings alongside the capacity improvement are also highlighted. Three-quarters of the customers understand perfectly the significance of diversification strategies in reducing risks and maximising profits; thus it makes they consider clean energy. An excellent 85% patron delight charge also confirmed the ability of the organisation to satisfy the ordinary consumer demands. However, 15 per cent of respondents revealed their request to have additional tailor-made solutions, which signalled an opportunity to improve in customised services. The reserved application of the contemporary age, which stakeholders think could significantly streamline operations and enhance the proficiency of the decision-making process, has been alluded to as any other issue. The significance of aligning the offerings to the converting expectancy of the customers in an attempt to provide them with a boost to the bonds and bridging the gaps in the providers was also highlighted through the studies. To enhance the efficiency of operations and customer interaction, Legal Force RAPC Pvt. Ltd. can, additionally, refine its tactics by addressing those issues. These annotations provide a useful starting point to make realistic recommendations for practice so that exercise will improve the position of the agency within the cutthroat portfolio management sector. This realistic assessment of the strengths and weaknesses points out the achievements of the corporation and the aspects that can be enhanced to contribute to the success of the corporation in the long term. Conclusion: The report ends with the help of the highlighting of the achievements of Legal Force RAPC Pvt. Ltd. in providing robust portfolio management services, specifically with the help of the success of the hits diversification strategies, which reduce risks and increase profits to the maximum. The fact that the organisation can maintain a high level of customer participation shows the efficiency of the services provided even more. Nevertheless, the repercussions show that in the place where one may facilitate running techniques and meet changing client expectations, it is crucial to provide a priority to tailored funding plans and implement current technical devices. Finally, and not least, these loopholes may make an organisation more flexible and creative in a competitive business. Those improvements will then be put into practice and will give Legal Force RAPC Pvt. Ltd. the capability to sustain the relationship with clients over the long run, grow sustainably and become a market leader in the portfolio management sector.

RECOMMENDATIONS:

To enhance portfolio management services at Legal Force RAPC Pvt. Ltd., Investment methods should be better in my mind to meet the interests and opportunities of all the customers. Applying the current technology, including artificial intelligence-based analytics, can also enhance efficiency in operations and decision-making. Engaging the patrons with daily updates and open communication may assist in adding delight and will as true. In addition, a specific focus on the training of the workers to align with the transforming marketplace trends and the requirements of the felony would guarantee service delight and transparency, sales longevity, and consumer retention. Such measures will enhance the aggressive advantage of the organisation even as they appropriately fix the current problems.

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Market Analysis of Parenteral Nutrition: Trends, Challenges, And Future Prospects

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ABSTRACT

The global market of PN is growing at a great pace due to the rate of increased incidences of gastrointestinal issues, chronic diseases and malnutrition-related problems. Parenteral nutrition (PN) has turned out to be a life-sustaining therapy in a situation where victims are not in a position to intake their food through the enteral route. The paper is an in-depth market analysis of the parenteral vitamins which covers the key trends, operation drivers, challenges and growth opportunities. In cases where the patients cannot receive oral or enteral food, parenteral vitamins can rescue their lives, though this is a costly treatment with side effects that are manageable. The paper estimates supply and demand forces, the key participants, and the technical forces that lead to the advancement of the marketplaces. A critical examination of the felony systems that govern all popular PN items that are popular displays a concern with the conformance and safety standards change. This looks at the effects of pricing plans, price-efficiency and the aspect of accessibility in the penetration of the market across geographical areas. The evaluation is coming up with one of the conclusions in the form of the new use of the lipid-based, all-formula, and privately manufactured vitamins. Among the changes that are possibly transforming patient care, two are micronutrient-enhanced PN formulations and multi-chamber bags, which also might be minimising the risks of such outcomes as metabolic imbalances and catheter-related infections. The article states that digital health technologies and artificial intelligence are contributing more to improving the healing results, decreasing the mistakes and streamlining PN delivery. Although this development is happening, the PN marketplace must contend with problems such as the lack of elastic regulatory clearance, supply chain interruption, and healthcare infrastructure inequalities between the developing nations. The test shows that a partnership between pharmaceutical corporations, health practitioners and research institutions will promote a sustainable boom and promote the availability of life-saving cures for PN. Finally, this business place experience demonstrates that the development of the parenteral vitamins quarter is assisted by innovation, rational investments and legislative changes. The future of PN is ready to evolve with the patient-oriented direction and the generation integration to *guarantee your success in making sure that the world will witness the improved scientific effects and faster healthcare performance. Parenteral Nutrition, Market Growth, regulations, innovations, healthcare accessibility, Personalised nutrition.*

KEYWORDS: Cryptocurrencies, Market Capitalization, Key feature, Price Analysis

1. INTRODUCTION

Parenteral nutrients (PN) have become an enormous movement in the present-day healthcare scene, providing an alternative form of therapy to patients who are incapable of absorbing and digesting nutrients by other means, keeping them alive. It is a mandatory treatment for individuals with significant chronic illnesses and the majority of cancers, Crohn's, irritable bowel syndrome and individuals with post-operative complications and severe gastrointestinal symptoms. As stepped forward, influenced individual survivability and recuperation costs in critical care units, PN has developed throughout the decades into additional nutritional assistance to a vital healthcare intervention. The increasing awareness of medical nutrients, the ageing of the population, and the proliferation of the excellence of malnutrition-related illnesses have all contributed to the explosive growth of the PN market all over the world. PN has become an additional efficacious and individual method of treatment with the enhancement of lipid emulsions, amino acid preparations, and micronutrient-enriched liquids. In addition to the reduction in risks, which are infections and metabolic disorders, the automatic compounding era, as well as multi-chamber bins, have also enhanced safety, accuracy, and ease of administration. The population continues to age, the occurrence of chronic conditions, and the rising demand for parenteral nutrients as a unique healthcare due to individual needs are all factors driving the growth of the market of parenteral nutrients market. In matters that concern the cure of diseases such as the majority of cancers, gastroenterological complications, as well as malnutrition, parenteral nutrients are essential, also known as the procedure of administering the vitamins to patients who cannot swallow.

Additional driving the market includes the improvement of health centre admissions, an increase in the utilisation of domestic-based healthcare services, and healthcare infrastructure improvement. Although the PN zone is rapidly growing, it has a number of limits. High costs of manufacturing, strict regulatory systems, and inequality in the provision of healthcare are some of the factors that cause the lack of widespread recognition, particularly in poorer countries. Moreover, research and continuous development are necessary to improve formulas and means of transportation due to the problems that are linked with chronic PN use, including liver damage and catheter-related blood-related diseases. The solutions that are generation-pushed, such as biosensors and artificial intelligence, optimisation of dose transportation and the supervision of patient response in real-time, are the gems of the future of PN. It is believed that the collaboration of pharmaceutical organisations, medical centres and research teams will drive long-term growth within the area. PN can become a supplementary, possible, productive, and life-affirming scientific option when the demand for effective dietary treatment increases, and some improved medical outcomes of patients are assured everywhere.

The role of Parenteral Nutrition in Healthcare: Parenteral nutrients (PN) are a life-saving treatment in patients with inadequate nutrition via their digestive system. In order to cure severe infections, gastrointestinal failure, and malnutrition, it is important to ensure that essential nutrients are provided to the body immediately. PN is particularly necessary in cases involving vital care, the majority of cancers, and infant care, where specific dietary assistance accelerates recovery and adds to the outcomes of the afflicted patient. The increasing need for PN is also brought about by an ageing population and an increase in chronic diseases, making it a crucial part of the modern healthcare system.

Market Growth and New Trends:

The active increase in the parenteral nutrition (PN) marketplace can be attributed to the tendency in technological development, the increased awareness of the therapeutic value of vitamins and the increase in healthcare costs. Among the innovations that are changing the care of patients and enhancing efficiency and protection, one can single out lipid-based full formulations, multi-chamber luggage, and individualised vitamin plans. Besides, the artificial intelligence and virtual healthcare devices are altering the PN management, enhancing real-time monitoring, and offering sufficient nutrition. The mentioned factors are riding on a quality-upgrade trend since medical establishments are increasingly focusing on personalised care and are making PN more intuitive and efficient in improving patient outcomes. Challenges and the Regulatory Environment: Despite the importance of the parenteral vitamins (PN) industry in terms of its critical role in meeting the patients, certain obstacles reduce the immense usage of the industry. Businesses that have undergone rigorous protection and best practices are allowed to enter the marketplace place and that is where regulatory permits are the best thing to do. The undermining of accessibility also takes place in high production tariffs and hard logistics of the supply chain, especially in new destinations abroad. Further, the medical policy is not the same in all countries, which causes disparity in the cost and availability. Patient safety is the most important issue ever, as there is now an immense amount of consciousness regarding the reduction of nuisances like bloodstream infections caused by catheter insertion by using strict guidelines and through innovation.

Future Prospects and Innovations:

The future of parenteral nutrients (PN) will be driven by innovation and collaboration between the pharmaceutical companies, clinical experts and the researchers. The next-generation technologies to be implemented to promote accuracy, safety, and patient outcomes are biosensors to monitor in real time and intelligent PN designs. An enhanced nutritional formula made up of personalised nutrient plans will enhance the efficacy of care. Accessibility needs to be increased; in particular, in underprivileged regions, changes in strategic investments and coverage are needed. PN can transform the scientific nutrient by imparting less harmful and more constructive therapeutic interventions on an international level as it evolves with radical solutions.

OBJECTIVES:

To examine the inherent characteristics of the marketplace, drivers and constraints in the field of parenteral nutrients.

To take a glance at new styles and technological advancements that influence PN improvement. To investigate the impact of regulatory structures on accessibility and affordability of the market.

2. REVIEW OF LITERATURE

The parenteral nutrients (PN) sector has been reviewed quite extensively, and students have reviewed various topics, such as marketplace growth, technical trends, regulation, and new trends. The review provides knowledge of the significant contributions to this subject matter and underlines the large discoveries of previous studies. Trends in Demand and Market Growth Smith et al. (2020) note that the PN market in the world has been magnificent because of the increasing cases of persistent diseases and malnutrition-related predicaments. The article highlights that PN is gaining prevalence in vital care devices and infant care, whereby an exact nutrient prescription is essential to patient healing. According to Jones and Taylor (2021), older people are particularly driving the growth of the marketplace. They show the increasing need for individual nutrition plans that can be adjusted to the needs of patients. The rising incidence of chronic conditions, comprising the majority of cancers and gastrointestinal complications, has led to a gradual rise in the PN sector, in accordance with Johnson and Lee (2018). Their findings indicate that the demand for PN has been greatly affected by the increasing population and the increasing hospitalisation costs. Carter et al. (2020) researched the additional broad use of PN, particularly in new childcare and significant care equipment, due to the increased awareness of medical vitamins. They indicated that the PN usage is gradually increasing in emerging countries because of increased healthcare setups. Technological Advances in PN: The adoption of new technology in the PN market has seen significant influence through the adoption of the latest technology. Miller et al. (2019) cover the results of multi-chamber baggage that have enhanced the effectiveness and safety of PN management. Based on their results, the said tendencies have enhanced the convenience of PN guidance and reduced the risk of contamination. Patel and Singh (2022) explored the application of synthetic intelligence (AI) in the optimisation of dose and transport in PN. They found out that AI-based systems enable patient monitoring and reduce errors, which enhances medical results. The research on the potential benefits of technology in the improvement of PN formulations and transport strategies has been conducted by many researchers. Anderson et al. (2019) centred attention on the benefits of the lipid-based emulsions and amino acid-enriched emulsions in reducing metabolic complications and enhancing patient outcomes. The application of a computerised compounding system in making PNs was also highlighted by Roberts and Patel (2021), which reduces the risk of infection and provides the right amount of nutritional value. Based on their research, automation has increased productivity to a great extent in both home care and health facilities. Regulatory and enterprise Challenges: Regulatory regulations continue to pose as one of the greatest challenges to the growth of the PN enterprise. Brown et al. (2020) proclaim that stern product clearance practices on PN formulations are intentional to postpone the availability of products, which influences the availability of the market. Williams and Chen (2021) experimented with the financial challenges of making PN and discussed how, in some regions, especially those with low income, it is not very affordable, due to high costs of production and complex distribution networks. Their studies suggest that these barriers can be removed by regulatory changes and intelligent collaboration between pharmaceutical firms and healthcare firms. The PN quarter can hardly be dealt with by rules that impinge on its price and availability. Thompson and Kim (2020) investigated the way in which international regulators, including the FDA and EMA, can influence the PN marketplace environment. They have determined that the process of approving various drugs by different countries is such that it is hard to introduce new formulations into the market. In line with White et al. (2022), the tricky supply chains, excessive production costs, and strict sterility requirements, which place PN in challenging access situations, were highlighted in jobs with limited sources. Future developments and opportunities: It is expected that future trends in PN will promote changes in the marketplaces. According to the study by Thompson et al. (2023), PN systems based on biosensors are increasingly becoming popular and allow patients to check their nutritional status in real-time. Such a development should increase the PN therapy accuracy and effectiveness. More so, that enables you to reduce the environmental impact of production,

Green et al. (2022) PN emphasises the importance of sustainable methods and the opportunity of manufacturing. The new development will see the PN market shifting in the coming years. Wilson et al. (2023) covered the likelihood that the smart PN system between the biosensor and the artificial intelligence (AI) in monitoring the response of the patient in real-time. Their study suggests that individual PN treatment produced by AI-controlled nutritional adaptation can enhance clinical outcomes. The survey by Jackson and Gupta (2022) also recommends sustainable production of PN to minimise the environmental impact of PN construction (including sustainable PN production methods, e.g. biodegradable packaging, plant-based lipid emulsions). Economics and market driver: Economic reviews are a significant influence on the PN marketplace growth. Green et al. (2021) note that the PN zone boosted clinical nutrients pointers because of rising authorities and fitness programs. His results show that cooperation between pharmaceutical companies and medical institutions has augmented the supply of PN medicinal drugs. The size of state subsidies and coverage insurance are both influential factors impacting presence in the marketplace in many geographic locations, as indicated by experimental research conducted by Martinez and Brown (2023) on the effects of the compensation policy on PN strength.

3. METHODOLOGY

The article examines the trends, stressing scenarios, and opportunities passing through the nutrition (PN) area of parents using a secondary records research method. A review of literature, advertising research, industry research, and regulatory suggestions or other reliable sources, such as a course of authorities, fair trade journals, fitness agencies and reviews of drugs, are some of the prerequisites for compiling the secondary information. This approach will ensure that the PN market situation is drawn closely without necessarily having to obtain first-hand statistics. The research is based on secondary information, which is used to provide a radical and well-structured observation of the PN marketplace. To impart advantageous expertise about the marketplace forces, regulatory and potential prospects in the future on the path to supporting strategists in formulating strategic decisions. Collect sources and data. The facts used in this study were provided by a type of secondary sources that provide a radical analysis of the parenteral nutrients (PN) enterprise. Research articles and scholarly publications focused on technological innovations, regulatory hindrances, and trends in PN enterprises. The market research companies involved in the health gadget assume enterprise research, which gives both local and international analysis. The sources of government and regulatory knowledge of the requirements include the FDA, EMA, and WHO pointers. It also provides insights into PN adoption, its use of fashion, and its impact on patients within the healthcare setting using medical and health centre research.

2. **Data Analysis Approach**

Based on every qualitative and quantitative content evaluation, the research integrates statistics on the secondary assets. The prominent marketplace records taken by us relied on the market studies papers, and they are growth fees, revenue projection, call of drivers, and industry trends. Moreover, to achieve the vision of the brand new trends and developments present in the PN area, qualitative findings of academic research and professional perspectives were used. Table 1: A systematic approach will be used to make sure that the dynamics of PN marketplaces are being examined thoroughly with the help of the insights obtained via the use of secondary sources. The research adheres to a qualitative and quantitative content analysis method of bringing together information from the secondary sources of data. The most important market indicators, including growth rates, revenue projections, drivers of demand and industry challenges, have been pulled out of the market research reports. Furthermore, qualitative data provided through scholarly research and professional views have been examined to examine the new trends and innovations in the PN industry.

TABLE 1: Structured approach ensures an in-depth analysis of PN market dynamics, backed by data-driven insights from secondary sources.

Aspect of Analysis	Description & Data Insights
Qualitative Content Analysis	According to Carter et al. (2020), the global parenteral nutrition (PN) market is estimated to be approximately [?]539.5 billion ([?]53,950 crores) in 2020, and further development is projected due to the increased demand in intensive care units and oncology units.
Quantitative Content Analysis	Demand can draw out significant market signs such as drivers, growth rates, and revenue estimates. According to a market survey conducted by Smith and Associates (2022), the annual growth rate (CAGR) of the PN market in the period between 2022 and 2030 is projected to be mixed (5.8%), which is motivated by the gastrointestinal issues and a higher number of patients with malnutrition.

Market Indicators Evaluation	Checking market issues, the impact of rules and the pattern of investment. To illustrate, Johnson and Lee (2021) have noted that regulatory restrictions in most courts disrupt the approval of new products; On average, the FDA requires 18-24 months to approve PN yogas.
Comparative Analysis	Cites a variety of resources to guarantee precision and confirm effects. A study by Green et al. (2021) on the availability of PN in developed and developing nations has determined that the problems of the supply chain and cost barriers make the price of PN adoption in high-profit countries (752) higher than in low-income countries.
Trend Identification	Explores new market opportunities and characteristics of the time. The sector is shifting towards the use of precision vitamins, which is supported by the research done by Roberts and Patel (2023), showing that intelligent PN designs with AI-assisted dose monitoring have improved treatment outcomes using 30% in clinical trials.

Scope of the study:

The area of this observation is a radical review of the Parenteral Nutrition (PN) zone, which involves its predicaments, developmental trend, regulatory environment, and possible success. Growth in gastrointestinal complications, long-term diseases and malnutrition and generation improvements are all under research by scientists who include the new passion of PN. It also addresses the regulatory framework that has been introduced to businesses, including the FDA and EMA, with a focus on its effects on the availability and the protection requirements in the market. Some of the most important issues that involve high manufacturing cost, complex chain of dealers and PN availability are comprehensively analysed through local variances. Moreover, studies are going on in new developments, including biosensors and smart infusion, treatment outcomes, and how they can be used to augment market expansion. The research offers uninterrupted engagement on enhancing patient care by innovations in PNs by enhancing clinical nutrition and availing real-world information to investors, pharmaceutical firms, lawmakers, and other health practitioners. Findings of the study indicate that the market is growing very well in parenting (PN) as there is a rising trend in cases of gastrointestinal diseases, chronic diseases and malnutrition. Innovation in Technology, such as multi-chamber bags, lipid-based plans and AI-based surveillance systems, makes the process of PN management more efficient and safer. The cost of production, the rigid regulatory framework, and the challenges of the supply chain remain significant challenges to developing the industry, but not yet. The research indicates the disparity in the subscription to PN, with the affluent nations utilising PN at faster rates than the low-income neighbourhoods. Moreover, the improvement of smart infusion devices and tailor-made diet plans promises a bright future for PN, which should enhance patient outcomes along with cost reduction. The PN quarter can further increase market access and enhance the health care impacts in the world by resolving these challenges through legislative changes, research on investment and regulatory support.

4. CONCLUSION

Parental nutrients (PN) are one area that has been identified by market research as being vital in the present healthcare, particularly with patients laid low due to malnutrition, gastrointestinal complications, and persistent illnesses. PN is fast, unparalleled, and environmentally friendly when it comes to technical advancements such as multi-chamber bags, lipid-based formulations, and AI-operated surveillance buildings. It remains an uncommon product although in particularly in expanding overseas destinations, due to the presence of barriers that involve strict regulations, high-cost production and networked delivery systems. The projected boom of the marketplace through the increased demands of critical care, most of the cancer and paediatric care presents the need to invest strategically and change legislation to make the market accessible. In addition, the possibility of an effective future of PN with the introduction of smart infusion technology and similar vitamin regimens will make the results more affordable and more effective towards patients. To maintain the long-term expansion and reach of PN, the powers, health officials, and corporate leaders ought to work to eradicate the barriers to treatment and make it more accessible.

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