ANEKANT EDUCATION SOCIETY'S

Anekant Institute of Management Studies

AIMS, Baramati

15TH NATIONAL CONFERENCE

AI

Artificial Intelligence and Human Values for Sustainable Development

"Advancing Technology with Ethics and Purpose"

Saturday, 11th October 2025

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About the Organizations

Anekant Education Society

Anekant Education Society was established in 1961 under the able guidance of Late Shri Fulchandji Gandhi, Education Minister of the Former Hyderabad State. The founder President of the Society, Late Shriman Seth Lalchand Hirachand Doshi, founder President of Premier Automobiles Ltd., and Walchand Group of industries was determined on attracting the best talent to institutions operating under the auspices of AES.

The society has chosen the Jain concept of 'Siddhimekantat' and 'Anekantvad' in the nomenclature of the Society. The Society started Undergraduate Programs in Baramati in the year 1962. The college eventually was renamed as Tuljaram Chaturchand College. In a span of about 5 decades of its presence, Anekant Education Society has touched upon the lives of almost every household in and surrounding areas of Baramati.

Anekant Institute of Management Studies (AIMS), Baramati

Anekant Education Society has added another feather to its cap by starting AIMS to provide MBA course. AIMS is certainly working beyond excellence in all the accreditations, affiliations and Certifications of the nominated authorities. The initiative is to develop management professionals with a view to excel in the corporate world as well as take it to new heights.

The need is to nurture the talents and hone their skills which are achieved only through AIMS. Since its inception, AIMS is providing quality education and in a period of few years the Institute has made its mark on academic, cultural and social environment of Baramati.

About the Conference

About the 15th National Conference

This conference seeks to foster meaningful interdisciplinary dialogue on the evolving relationship between Artificial Intelligence and society. By bringing together experts from technology, ethics, policy, and social sciences, it aims to explore how advancements in AI can be ethically aligned with core human values such as fairness, transparency, and accountability.

The conference will underline the need for inclusive approaches that give space to diverse voices and perspectives. Emphasis will also be placed on promoting responsible innovation that not only mitigates risks but also maximizes societal benefits.

The ultimate goal is to identify pathways where AI supports sustainable development and works as a tool for human progress rather than replacement.

Objective of the Conference

To explore the ethical alignment of AI with human values like fairness, transparency, and accountability, and promote responsible innovation for sustainable development.

Title: **Artificial Intelligence and Human Values for Sustainable Development**

Author: Dr. M. A. Vhora (Editor)

Anekant Institute of Management Studies, Baramati

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From AES President's Desk

Dear Participants,

Greetings from Anekant Education Society's Anekant Institute of Management Studies (AIMS), Baramati. I heartily congratulate the AIMS team for consistently organizing 15 National Conferences in series since its inception. AIMS has always catapulted on issues pertaining to society and industry by virtue of conferences. In continuation to the same, this year theme of this conference covers the Artificial Intelligence and Human Values for Sustainable Development.

Strengthening the use of AI for sustainable development is fundamental for fostering trust, accountability, and transparency in administration. Integrating ethical principles while using AI contributes to the development of a responsible and responsive governance, which is critical for promoting society's well-being.

I believe the preceding context has made the present National Conference extremely engaging by attracting intellectual discussions as well as paper presentations. I wish all the success to the organizing committee, resource persons, and delegates.

Shri. Jawahar M. Shaha (Wagholikar)
President, Anekant Education Society, Baramati

From AES Secretary's Desk

Dear Scholars,

I am happy to know that AIMS is organising the 15th National Conference on Artificial Intelligence and Human Values for Sustainable Development. The topic chosen for the conference is a great endeavour to understand the role of values and technology in strengthening the process of governance.

Industry is moving from Management by Objectives (MBO) to Management by Values (MBV) with more emphasis on values and principles in the process of governance. Technology is playing an increasingly vital role in modern governance, transforming how governance operates and interacts with stakeholders.

The thoughtful deliberations of industry persons, academicians, research scholars and students at this juncture will surely unleash the new dimensions of the theme.

My best wishes to all the stakeholders of this intellectual congregation.

Shri. Milind R. Shah (Wagholikar)
Secretary, Anekant Education Society, Baramati

From the Desk of Secretary, AIMS

Dear Friends,

It is with great pleasure that I welcome the delegates and guests to the 15th National Conference 2025 in hybrid mode. As mentioned in the tagline, AIMS is always aiming beyond excellence and has created a benchmark in management education through innovative practices.

The upcoming 15th National Conference is adding another feather to our cap. In spite of being located in a rural area, AIMS has always held its head high for extraordinary contributions to society and industry.

The present conference is leaping forward the legacy of the institute and paving a path for stakeholders to deliberate on the issue pertaining to AI based and Techno-powered Governance.

I am sure that the keynote speakers, researchers, and participants will develop new conceptual models based on the theme of the conference.

Wishing a great success to this conference.

Dr. Harshvardhan Vhora
Secretary, AIMS, Baramati

Preface

Professional Greetings!

Dear Esteemed Members, Researchers, Scholars, Academicians, Students, and Well-Wishers,

It is our immense pleasure to welcome you to the 15th National Conference on *Artificial Intelligence and Human Values for Sustainable Development*.

We have designed the conference to be student-friendly and highly engaging, adopting a HYBRID mode to ensure accessibility and ease of learning. The successful inauguration of this conference marks a significant milestone, coinciding with the 15th Anniversary of our Institute—a testament to our unwavering commitment and meticulous planning. Truly, a monumental achievement by the entire AIMS Team.

In today's rapidly evolving world, the theme *"Artificial Intelligence and Human Values for Sustainable Development"* is both timely and essential. After thoughtful deliberation, our distinguished faculty selected this theme to address the pressing need for harmonizing technology with ethical and sustainable practices.

The blueprint of this conference was meticulously crafted under the leadership of Prof. Dr. S. S. Khatri (Convener), supported by an exceptional team:

- Review & Editing: Prof. Dr. Tanaji Chavan, Prof. Dr. Sandhya Khatavkar
- Presentation: Prof. Dr. Priti Hanchate
- Registration: Prof. Dr. Manisha Vhora
- Designing: Prof. Dr. Pravin Yadav
- Anchoring: Prof. Dr. Dattatray More
- Social Media: Prof. Dr. Abhishek Dikshit
- Technical: Prof. Dr. Tanaji Chavan

Our Hospitality Team, comprising Mr. Vijay Shinde (O.S), Mrs. S. M. Beldar (Accountant), Mr. Uday Gardi (Librarian), and all our dedicated non-teaching staff, played a pivotal role in ensuring the smooth execution of this event.

We look forward to an enriching experience filled with knowledge sharing, meaningful discussions, and thought-provoking insights.

Wishing you all a fruitful and inspiring conference!
With Warm Regards,

Dr. D. B. Bagul
Director, AIMS, Baramati

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Navigating the Impact: Sponsored Social Media Advertising and Its Influence on Consumer Behavior

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Abstract

The purpose of this study was to find out the elements of sponsored advertisement that plays a crucial role in influencing a buyer in making buying decision. This empirical research was done with a purpose to find out the impact of sponsored advertisements through social media on the behavior of the consumer. The correlation between the consumer buying behavior as the major variable of this study and some other independent variables like poster advertisement, video advertisement, advertisement using GIFs, interactive advertisement, impact of social media influencers that help the consumer in their buying decision process were identified with the help of this research. The structured questionnaire was used to collect the primary data and for research purposes SPSS software was used. Results show that sponsored advertisements engage the customer with the product because of the customers curiosity, influence shopping and the availability of relevant advertisement in the online news feed on customers social media account.

Keywords: *Advertisement, social media, Consumer Behavior, Sponsored advertisement*

Abbreviations: SNS, Social Networking Sites; SMM, Social Media Marketing; WOM, Word of Mouth; SNA, Social Networking Advertisements; CRM, Customer Relationship Management; IMC, Integrated Marketing Communications

I. INTRODUCTION

In this, research, paper a study was made on the consumer behavior when they make a purchase, with a special emphasis on how does sponsored advertisements on social media influence the customer in making a purchase decision. A purchase made by the consumer in this context refers to the simple, frequent, first time and provoked purchases either through retail or through online platforms.

Sponsored advertisements on different social media platforms as we can observe is a very recent phenomenon. Over a time of last decade, we have observed a proliferation of users on different social media platforms, statistics show that somewhere around 79% of internet users use Facebook and recently there

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has also been an exponential growth in the users of Instagram. The utilization of the social media by shoppers were restlessly followed by advertisers, however not much is discussed about how it can impact in making of the consumers' buying decision [1].

Conventionally, the typical media of advertising and marketing were billboards, television, radio, magazines and newspapers. Other media of marketing are handbills, leaflets, and cellular marketing located on automobiles. With arrival of the internet and the World Wide Web (www), advertising has appreciably taken a greater innovative measurement. The sponsored advertisements on the Social Media platforms are now engaging the customer with the product because of their relevance with the customers interest and opinions.

An essential objective of advertising is to sell a product which can be goods or services. Brands all over the world have invested billions of dollars into this project to make sure they connect to their target audiences on exceptional locations. By tracking the marketplace fashion, many brands have long gone in advance to design what they refer to as "market particular" ad messages, with very critical interest paid to media choice, truly to make certain that they do no longer miss out on their capability consumers.

The arrival of the social media, manufacturers at the moment are forced to be rather innovative in designing their advert messages for communication to healthy the flavor of young buyers on social media. Researches have already proven that adopters of latest conversation technologies are young, more exclusive and have better knowledge about the latest technologies. The commentary may be attributed to extensive exposure to facts era use in addition to the advantages accruable therein [2].

Social media use was predicted to replace many sellers' and marketers' traditional business methods, according to the Social Media Marketing Industry Statistics (2008). One of the causes was the rise in popularity of buyer-ranked manufacturers on social media platforms, which is now considered one of the most reliable forms of advertising marketing. Additionally, according to a global poll of 700 businesses by Wildfire App, 75% of sellers or marketers planned to increase their media spending in 2012, and nearly all entrepreneurs recognised value in social media. The ability to interact and communicate instantly with their buyers or customers, as well as the increased awareness of their brand, are the greatest benefits of employing these marketers.

According to the 2011 Social Media Marketing Industry Statistics Report, 88% of

business owners ranked more exposure as the main benefit of social media advertising. According to the 2012 Awareness Networks, seventy percent of firms increased their social media presence in 2012.Given that 307 million people visit a friend's social media network webpage and that there are likely to be almost 272 million members of social networking websites worldwide, social networking websites are quickly emerging as the most popular venues for the advent and sharing of facts (p. 1886). This widespread push on social media appears to be here to stay, primarily due to the ever-increasing allure of the various platforms, which marketers are constantly looking to tap into and influence what they may endure on their potential customers, the vast majority of whom are younger people who are adept at using social media [3].

II. LITERATURE REVIEW

Consumers or Shoppers are segmented based on their perspectives toward Social Media Marketing (SMM) and their relationship between socio-demographic, psychological and economic covariates. An aggregate of five fragments were recognized – Averse, Active, Hesitant, Talkers and Passive – alongside huge covariates, for example, data search, entertainment, convenience, gender and age that foresee enrolment. Proof of two sections was found that were profoundly affected by SMM as far as brand commitment, buying purpose and WOM referral goal. The majority drew in – Active fragment – speaking to around 10 percent, was generally open for interfacing with brands in social communities, were plausible to make a buy because of the campaign, and liable to outspread WOM. The second group – Talker's fragment – speaking to 28 percent, was additionally high on all results, however not affected as significantly as far as purchase intentions were concerned. There was a substantial portion, i.e., 38 percent, of the market that was positively impacted through SMM [4].

The coming of web-based social networking is drastically changing the manner in which marketing or advertising communication is directed. This industry is serious and absolutely subject to making mutually valuable associations with clients [5].

Social Media being one of the most well-known and easy to understand platform for regular communications, advertisers are recommended to dispense a substantial portion of the advertising spending plan for social media life commercials and client tryst in order to assist in constructing a positive demeanor for the publicized brand in the Social Networking Sites (SNS) customers' minds. An ideal demeanor towards the Social

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Networking Advertisements (SNA) subsequently created can emphatically impact brand outlook and buying intention [6].

Social Media holds tremendous possibilities for corporations and companies to get nearer to clients & customers and, along these lines, increase income, efficiencies and abatement the expense. In any case, using web-based social networking as a channel for customer engagement would crash and burn if the conventional CRM approaches are not redeveloped. As per IBM research, there was an enormous perception gap between what the customers search for by means of social media and what associations offer. Purchasers were undoubtedly increasingly keen on obtaining sizeable worth, proposing organizations might be befuddling their own desire for buyer closeness with buyers' inspirations for engaging. Social CRM is another new methodology that perceives shoppers have solid feelings about connections as shoppers being overseen in a social media setting and that their ability to draw in with organizations ought not be accepted, underestimated or taken for granted [7].

According to Bob Garfield: “The marketing commercial enterprise is going through its chaos state of affairs, a jarring media universe in which traditional sorts of mass enjoyment hastily disappear and advertisers are left inside the lurch. This new, jarring media universe is solid by means of the interaction of converging technologies and the adjustments they pressure in how, when, and why humans consume them (and the advertisements they comprise)” [8].

It is sufficient to mention that experts' predictions regarding those platforms' impact on broader marketing initiatives within the context of integrated advertising dialogue are extremely important. "A strategic enterprise procedure used to plan, increase, execute and compare persuasive, coordinated, measurable persuasive logo verbal exchange programmes through the years with clients, customers, possibilities, and different Centred, relevant audiences" is how integrated advertising and marketing conversation is defined. Three terms are used to emphasise the main distinction between the definition of IMC and that of just advertising conversation: i) strategic, ii) compare, and iii) measures. IMC essentially regulates the use of verbal exchanges in marketing and advertising in a way that is strategically planned to achieve favourable goals, assessed to impose responsibility on marketers, and regularly reviewed [9].

IMC as “a target audience pushed a commercial enterprise method of strategically managing stakeholders, content, channels,

and outcomes of logo conversation programs" [10].

In view of those descriptions, it must be cited that the media have undergone an in-depth segment of improvement within the last ten years. Previously, entrepreneurs centered on promoting their product/provider in traditional media like radio, TV, newspapers. However, the marketing global has long gone as digital era has become a crucial part of day to day lives [11]. These adjustments drastically join into the colorful adoption of social media inside the space of incorporated marketing verbal exchange of which advertising and marketing performs a chief role [12].

Social media has evolved into a public arena where users can share their opinions, ideas, insights, and reviews. Social media and "customer generated media" are terms used interchangeably by Blackshaw and Nazzaro. He said that these new online resources are "a spread of different people's opinions about personalities, products, services, brands, and issues that are circulated, created, and utilised by clients"[13].

Secondary exposure impacts brand decision. Additionally, it shows that for product categories which were of low-involvement, the sort of social media revelation doesn't impact brand decision fundamentally between types. For product categories which were of high-involvement, promotions performed better than supported story executions; customer-created brand messages perform better than brand-created messages; and the impact of reference bunch influences brand decision. Brands advantage by essentially taking an interest and publicizing in social media life, yet the implementation methodology matters to a more prominent degree for high-involvement product categories in impacting brand decision. Shoppers may be accidently impacted through minimal subjection to a brand message. Frequent vulnerability as short as 5 seconds for every view was connected with surge in choice of brand [14].

Interactive brand posts are reacted more as often as possible than the message content which is informative. For informative intrigue Twitter was increasingly powerful, for interactive amusement posts Facebook performed better, and for interactive substance joining informative-entertainment call Instagram was progressively appropriate. Intelligent brand post with blended interests got most reactions in Instagram and Facebook, while the one who got least was message which was self-oriented [15].

"Social media has grown to be a powerful marketing and advertising communication channel, removing as well as changing the position of many conventional kinds of

marketing verbal exchange, due to the responsive, individualized and interactive nature of the medium. The conventional process to coordinate promotional equipment in advertising verbal exchange media, in addition to making sure a stable emblem message, is known as integrated marketing communications" (IMC) [16].

A web-based social networking advertisement shown with a large number of "likes" is seen to be progressively trustworthy, which would then be able to yield increasingly inspirational mentalities towards the brand. Be that as it may, the utilization of viable divulgences directs this relationship. To counterbalance this impact, organizations can re-establish the estimation of "likes" by expressing their firm-serving thought processes straightforwardly when they create social media advertising messages [17].

Social media structures, inclusive of blogs, wikis, vlogs, micro-blogs, content communities and podcasts, seem to have shifted audiences from objective, traditional, institutional views and rational of social networking to subjective, emotive, personalised perspectives [18]. The shift is pushed by advancement in verbal exchange technology.

The coming of social media has brought another point of view for guerrilla marketing since it increases the reachability of the advertisement through the help of internet.

In the travel industry setting, the adequacy of social media advertising stays minimal known to experts and researchers regardless of the regular utilization of social media by the travel industry clients or consumers and organizations in the recent years. The travel industry advertisers should concentrate not just on creating data rich and engaging social media advertisements but in addition a tenable substance of the promotions. Moreover, Facebook ought to be efficiently coordinated by the travel industry professionals in their correspondence system as it influences the demeanor and thus the conduct of the customers particularly when the organization utilizing social media advertising has a decent corporate reputation. Food advertisements embraced by a VIP create more delight and excitement than those supported by food specialists. Food promotions utilizing significant levels of visual multifaceted nature prompts gives more delight and excitement than less intricate advertising. Be that as it may, less mind-boggling food advertisements utilizing food specialists make more prominent delight than those embraced by VIPs and celebrities. Shopper delight and excitement are critical mediators of the effect of endorser type and visual multifaceted nature on buyer's buying

intentions. As famous people and more significant levels of visual intricacy bring about progressively positive reactions to Instagram promotions, food advertisers need to think about expanding visual complexity when utilizing VIPs and celebrities in publicizing by including more articles, utilizing more colors, items, or textures and joining asymmetric components in the advertisements [19].

Advertising at the internet takes a ramification of bureaucracy. Advertisers are asked to pay diverse quantities of price in comparison to what they advertise and period of adverts in precise blogs. They also use the pay consistent with click on advertising and marketing wherein advertisers most effective pay whilst a client clicks on the advert and hyperlinks to the advertiser's website. Some other sorts of on-line advertising include display commercials, search-associated commercials, and online classifieds. The most commonplace shape is banners, banner-shaped classified ads discovered at the bottom, pinnacle, left, centre or right of a webpage, pop-ups and interstitials. Pop-ups are the online commercials that seem in a new window in the front of the window being viewed. Interstitials are on-line advertisements that seem between display adjustments on an internet-website, mainly at the same time as a new display is loading [20].

Social commerce might be less effective than foreseen because of the customers' extensive avoidance behavior. Tie strength and ads importance are adversely connected with avoidance behavior, while data overload and infringement of shared language have fundamentally beneficial outcomes. Besides, tie strength debilitates the negative connection between infringement of shared language and avoidance behavior yet fortifies the positive connection between relevant advertisement and avoidance behavior.

Popular Nigerian blogs with a large following, such as Lindaikeji Weblog, Bella Naija Blog, Olori Supaergal Blog, Pulse.Ngblog, and Ladun Liadi Weblog, frequently feature one type of advertisement on their sites. Television commercials that end with a request for viewers to visit their websites demonstrate the relevance of social media. This situation is also quite common in the Nigerian market, especially for goods aimed at young people[21].

On the basis of above literature review following hypothesis has been prepared:

H1. There is a significant effect of social media on buying decision.

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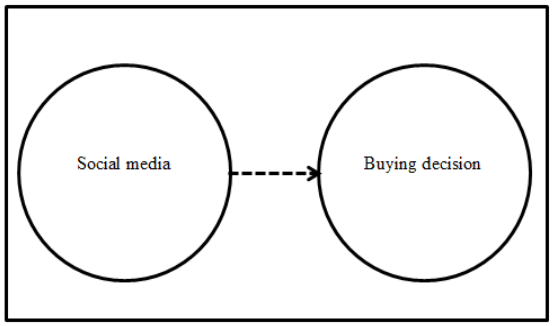
Fig. No. 1 Research Model



III. RESEARCH METHODOLOGY

The purchasing decision of buyers is a dependent variable which is influenced by the independent variables that are used in the study.

This study will collect primary data from respondents using a structured questionnaire in order to find out the influence of sponsored advertisement on social media in making a buying decision for customer. The statistical tools SPSS and Excel were used for data analysis.

The sample size of the research was selected as 150 individuals, taking into consideration all demographics. The entire study was done out over a period of couple of months and the survey was filled by people ranging from different age groups, different occupations and also different educational qualifications.

Out of the total sample size chosen 134 respondents answered the questionnaire however 16 respondents did not answer the questionnaire.

Sampling:

- Size of Sample: 150
- Method used in sampling: Simple random sampling
- Error in Sampling: Response- 134, Non-Response-16
- Method of Survey: Questionnaire

IV. DATA PRESENTATION AND ANALYSIS

The total sample size was taken as 150 and out of the total 134 respondents answered the questionnaire while 16 respondents did not answer the questionnaire.

I. SPSS Analysis and Interpretation

A. Bartlett's and KMO test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.857
Bartlett's Test of Sphericity	Approx. Chi-Square	633.101
	df	78
	Sig.	.000

While doing the Bartlett's test of sphericity we found that the approx. chi-square statistics is 633.101, the degree of freedom is 78 which is significant at 0.05 level. We realize that this test is utilized to test the null hypothesis that the factors in the population are uncorrelated. The null hypothesis will be dismissed if a huge estimation of the test measurement is observed.

Another valuable measurement is the Kaiser-Meyer-Olkin (KMO) proportion of sampling adequacy. The correlations between pairs of variables cannot be explained by other

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variables if small values are observed in the KMO statistic, this will also show that the factor analysis is not appropriate. Generally, the desirable value is 0.5 in the KMO test.

Here the value of KMO statistic is 0.857 which is large and therefore factor analysis can be considered as an appropriate technique.

A. Communalities

	Initial	Extraction
I enjoy online shopping	1.000	.830
If I feel a need of some thing I go and buy it online	1.000	.752
I often see advertisements in my news feed	1.000	.727
I click on the advertisements in my news feed	1.000	.524
These advertisements are often of the products that I search for	1.000	.680
The better the advertisement the better are my chances of buying	1.000	.576
The advertisements generally boost the curiosity level inside me	1.000	.639
After watching a good advertisement in my news feed, I often surf on internet to explore more about the product	1.000	.678
If the advertisement is good, I buy the product	1.000	.635
I often go for buying that product which is continuously flashed	1.000	.582
If I have not a seen the advertisement of a product, I often refrain from making a purchase	1.000	.467
I often watch the latest advertisement of my favorite brand by going online	1.000	.695
Better the advertisement better the brand recall	1.000	.584

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The communalities describe the amount of variance a variable share with all other variables taken into study. The extracted communalities are the estimate of variance in each variable, which can be attributed to the factors in the factor solution.

B. Total Variance Explained

The table "Initial Eigenvalues" here gives us the eigenvalues. True to form, the eigenvalues for the factors, as we go from factor 1 to factor 13, is in decreasing order of magnitude. The total variance ascribed to a factor is demonstrated by their separate eigenvalues. The total variance change represented by each of the six components is 13.00, which is equivalent to the quantity of variables. Factor 1 records for a variance of 6.025, which is (6.025/13) or 46.343 percent of the total variance. Moreover, the subsequent factor represents (1.207/13) or 9.288 percent of the total variance, and third factor represents 8.760 percent of the total variance. The initial three elements consolidated record for 64.390 percent of the total variance.

In the rotated component matrix, we can see that factor 1 has high coefficients for variables X13 (better advertisement), X12 (latest Ads of fav brand watched online), X8 (explore more about product after getting news feed) and X7 (Ads boost the curiosity). Therefore, this factor may be labelled as curiosity factor. Factor 2 has high coefficients for variable X3

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.025	46.343	46.343	6.025	46.343	46.343	3.979	30.611	30.611
2	1.207	9.288	55.630	1.207	9.288	55.630	2.323	17.872	48.483
3	1.139	8.760	64.390	1.139	8.760	64.390	2.068	15.907	64.390
4	.933	7.178	71.568						
5	.768	5.905	77.473						
6	.607	4.670	82.143						
7	.440	3.387	85.530						
8	.430	3.310	88.839						
9	.385	2.964	91.803						
10	.353	2.712	94.515						
11	.295	2.266	96.780						
12	.237	1.824	98.605						
13	.181	1.395	100.000						

(see Ads in news feed) and X5 (same Ads as I have searched online). Therefore, this factor may be labelled as online news feed factor. Factor 3 has high coefficients for variable X1 (enjoy online shopping) and X2 (if needed, bought online) which may be labelled as influenced shopping factor.

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C. Rotated Component Matrix

	Component		
	1	2	3
I enjoy online shopping	.147	.065	.897
If I feel a need of something I go and buy it online	.218	.223	.809
I often see advertisements in my news feed	.089	.845	.071
I click on the advertisements in my news feed	.447	.471	.320
These advertisements are often of the products that I search for on the internet	.271	.743	.235
The better the advertisement the better are my chances of buying	.523	.438	.333
The advertisements generally boost the curiosity level inside me	.717	.272	.228
After watching a good advertisement in my news feed, I often surf on internet to explore more about product	.752	.185	.281
If the advertisement is good, I buy the product	.647	.361	.293
I often go for buying that product which is continuously flashed	.637	.300	.295
If I have not a seen the advertisement of a product, I often refrain from making a purchase	.553	.394	-.084
I often watch the latest advertisement of my favorite brand by going online	.803	-.160	.155
Better the advertisement better the brand recall	.709	.285	.028

V. MAJOR FINDINGS AND CONCLUSION

The study used a theoretical framework to conceptualize the impact of sponsored advertisement through social media on consumer behavior. The aim of the study was to identify the impact played by advertisements on social media platforms and what factors influence the consumers to watch those advertisements on their social media platforms. The research was able to find that almost 74 percent of the people who answered the questionnaire came across relevant product advertisements on their Social Media platforms and 53 percent of those who answered actually got motivated to buy the product by watching those advertisements. 44 percent of the people agreed that the advertisement boosts the curiosity level inside them to know more about the product. More than 42 percent people agreed that they watch the latest advertisement of their favorite brands online. Exactly 56 percent of the people answered that brand recall is better if the advertisement of the respective brand is better. Of the total 134 people who answered 73 people (54.5%) bought electronic gadgets, 71 people (53%) bought clothing, 52 people (38.8%) bought Food and 48 people (35.8%) bought Footwear after they watched respective advertisements on social media platforms. More than 40 percent of the people answered that they buy the product if they find that the advertisement of the respective product is good. After watching a good advertisement in their news feed on social media, 50 percent of the people often surf on internet to explore more about the product. Nearly 27 percent people, who answered, agreed while nearly 50 percent disagreed that

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they click on the advertisements in their news feed on social media platform, we can infer that the advertisements which ask the customer to click on them, may be to direct them to another webpage, are not of much interest to the customer and therefore they refrain themselves from clicking on those advertisements. 44 percent people also agreed that if the advertisement of a product is better the chances of buying that product at least once are also better.

The conclusion from the SPSS analysis and the tests is that the consumers like to engage themselves with an ad online because of: "curiosity", "online news feed" and "influence shopping"

VI. DISCUSSION

Social media impacts the buying decision of the consumer to a large extent. The interactive advertisements that are possible through social media platforms have increased the involvement of the consumer in making a buying decision. The advertisements have always tried to increase the curiosity of the consumer towards the product. Social Media has also become dominant platform for influence marketing and thus increasing influence shopping and impacting the consumer decision. The future of shopping can be observed as "online shopping" and Social Media will play a key role to influence consumers, to gain real insights about the market demands and to continuously increase the curiosity of the consumer. The only thing the marketers need to be cautious about is consumer avoidance and therefore marketers need to make more and more interactive advertisements and video advertisements so as to reduce the effect of consumer avoidance.

VII. FUTURE SCOPE

We know that in the near future the customer care service of the companies via digital channels is going is change substantially. In future, brands who have already used social media platforms for solving customer problems and for providing customer care will use social media-based customer care which will be more personalized, customized and universal.

Using famous people (in buyer markets) or notable sentiment pioneers (in business markets), who have a high social esteem, to impact others is a notable marketing strategy. However, small businesses cannot cast Cristiano Ronaldo, Virat Kohli or Selena Gomez who have millions of followers on Instagram and other Social Media platforms as they charge a huge amount of money for posting a single pic on their profile. Therefore, they capitalize on the success and popularity of those who are known as "micro-influencers", who are a new form of

influencers. Micro-influencers are not well-known celebrities, but have a strong popularity and following which are basically more targeted. They have followers ranging from few thousands to hundreds of thousands. Today, consumers and customers are present on almost all the social media platforms and have become Omni-Socially present. Consumers are enabled to socially interact digitally in different domains such as travel (TripAdvisor), food (Zomato), work (LinkedIn), Music (Spotify), etc. and traditional Social media companies have enlarged their foundation to give a more extensive cluster of functionalities and administrations (e.g. Facebook Marketplace). This shows that the modern-day customer is breathing in a omni-social world and companies in the future will capitalize more on this by understanding the needs and demands of the customer in a better way and by using analytics tools to continuously study consumer behavior on Social Media platforms.

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A Comprehensive Analysis of Real Estate Management in Pimpri Chinchwad: Challenges, Trends, and Strategies

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Dr. Prakash Karmadkar

Research Guide

Abstract*:*

Pimpri Chinchwad has evolved from an industrial hub into a dynamic independent urban center with a thriving real estate market. This study provides a comprehensive overview of real estate management in the region, examining the key factors driving the market and the major challenges faced by developer investors and homeowners. It synthesizes recent data on market trends, infrastructure impacts, and the roles of technology and governance. By analyzing the market's trajectory, this study offers strategic recommendations for sustainable and effective real estate management in Pimpri Chinchwad.

Key words: *real estate, challenges, investor, homeowners, governance, Pimpri Chinchwad, etc.*

Introduction:

Pimpri Chinchwad city, once recognized for its industrial sector has been a rapid and significant transformation into a burgeoning residential and commercial hub. Its strategic location, robust economic fundamentals driven by manufacturing and IT industries, and a consistent influx of migrants seeking employment have made it a prominent real estate destination within the Pune Metropolitan region (PMRDA). Developers and investors now face a complex mix of opportunities (increased demand and price appreciation) and constraints (stricter regulations, rising input costs, and environmental compliance). This study explores the multifaceted landscape of real estate management in PCMC, focusing on the interplay between market forces, infrastructural development, and regulatory frameworks.

Literature review:

Existing research on the Pune real estate market highlights PCMC's unique position as an affordable and well-connected alternative to central Pune. Publications from real estate portals, such as 99 acres and Ghar.TV, document PCMC's high-growth potential affordability and robust rental market studies. Organizations such as HUDCO have noted the city's symbiotic relationship with the wider PMDRA, with industrial growth catalyzing residential development. Reports from rating agencies such as CRISIL showcase the sound financial health of the Pimpri Chinchwad Municipal Corporation, supported by stable revenue streams and

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fiscal prudence. Research by institutions such as the Arihant Institution of Business Management has focused on specific market segments, such as the role of real estate brokers.

Research Methodology

This study employed a qualitative research methodology based on secondary data analysis. Information was gathered from various reliable sources, including real estate market reports from portals such as housing.com, 99 acres, and squares Yareds. News articles from reputable publications such as The Indian Express, The Times of India, and Pune Mirror cover recent events and regulatory changes. Industry analyses and ratings from financial agencies, such as CRISIL. Data from property consultants and management firms operating in the Pune region, such as property care and prime tech properties. Government and quasi-governmental body publications, including those from the Pimpri Chinchwad Smart City Limited.

Analysis of real estate Management in Pimpri Chinchwad: Market trends and growth drivers: Rapid Urbanization PCMC demographic profile shows substantial growth driven by migration with a strong demand for housing from both industrial and IT professionals. Infrastructure-led appreciation of key infrastructure projects significantly impacts property values. The upcoming Pune Metro corridor from Pimpri Chinchwad to Swargate and the proposed ring road are expected to enhance connectivity and drive 15-20% capital appreciation. Affordability vs value. Compared to the more expensive central Pune locations, PCMC offers competitive pricing, marking it as an attractive option for both first-time homebuyers and investors. Shift from industrial to diverse hubs. The market has successfully transitioned beyond its industrial roots to include a mix of affordable residential mid segments and high-end projects with a strong commercial sector catering to startups and tech companies. Robust rental market These area has a consistent demand for rental properties driven by its proximity to employment hubs, resulting in stable rental yuelds and high occupancy rates.

Challenges and management issues: Regulatory hurdles; recent issues, such as the Supreme Court’s stay on a Union Environment Ministry notification, have halted over 100 housing projects in PCMC, causing significant delays, increased costs, and financial strain for both developers and home buyers. Infrastructure strain: While development projects are in progress, PCMC faces ongoing challenges, including traffic

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congestion, which affects the daily commute and past issues with water supply sewage treatment. Mismatch in affordable housing the Pune Metropolitan Regional Development Authority (PMRDA) affordable housing schemes in PCMC have seen flats priced at rates comparable to the private market, potentially purring them out of reach for the intended low-income demographic. Sustainability and smart city implementation While smart city initiatives are underway in selected areas, project implementation has faced delays exacerbated by factors such as labor shortages.

Property management strategies to navigate these complexities several management strategies are being adopted. Professional property management A range of professional property management companies, such as property care and prime tech properties, have emerged to serve both local and non-resident owners by handling rental maintenance and other services. Leveraging technology, the implementation of technology, including an automated building permission system (Auto DCR) by the PCMC, aims to improve transparency and streamline regulatory processes. Smart city initiatives focus on technology-driven infrastructure improvements. Developer led solution prominent developer like Godrej properties and Mahindra life space are contributing to market growth by launching sustainable and well-planned residential projects Governmental intervention State level Government official like deputy chief Minister Ajit Pawar have pledged to resolved the issue stalled housing project by presenting the state's case to the Supreme Courts.

Discussion and Findings

Pimpri Chinchwad real estate market presents a paradox of strong growth potential and significant management challenges the key to sustainable management lies in balancing rapid development with robust governance and infrastructural planning.

Key market and management issues include differentiated demand across micro-markets, regulatory compliance challenges, construction cost escalation locations, value uplift from metro projects, and stricter environmental and civic compliance norms. Developers must align products with demand segments manages costs carefully and proactively handle regulatory requirements

Recommendations

Recommendations for enhanced real estate management in PCMC include

1. Streamlining regulatory approvals: Expediting environmental and other clearances through proactive governmental intervention is crucial to

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unblocked stalled projects and restore market confidence

2. Improving public-private partnership collaborative efforts between the PCMC PMRDA and private developers is essential to ensure that affordable housing remains accessible and that infrastructure keeps pace with development.
3. Targeted Infrastructure Investment, particularly in expanding metro connectivity and addressing traffic bottlenecks, is necessary to maintain PCMC 's attractiveness as a residential and commercial hub.
4. Promoting sustainable development adopting green building techniques and incorporating smart technologies more broadly in new projects will cate to growing segment of environmentally conscious buyers and support long term city planning
5. Strengthening property management ecosystems: Encouraging and regulating property management services can benefit non-resident investors and tenants, ensuring better maintenance and tenancy management across cities.

Conclusion

The real estate market in Pimpri Chinchwad is a dynamic and high potential sector driven by robust industrial growth burgeoning IT presence and strategic infrastructure development However effective management of this growth is critical to overcoming persistent challenges related to regulation infrastructure and housing affordability by adopting strategic data driven management approaches and fostering stronger public private collaboration PCMC can secure its position as a leading sustainable and prosperous real estate market

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An analysis of healthcare services Management in Pune

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Research Guide

Abstract

This study explores the various landscapes of healthcare management services in Pune. It is characterized by rapid urbanization, a growing IT sector, and a diverse population. Hospital healthcare services management plays a pivotal role in ensuring high-quality medical care, operational efficiency, medical truism, and patient satisfaction. With the increasing demand for health services, hospitals are under pressure to balance clinical excellence with financial sustainability. It examines the management of healthcare services across the public and private sectors, mainly focusing on key areas such as quality of management, technological adoption, accessibility, and patient satisfaction. This study is based on existing literature and identifies prominent challenges, including high costs in the private sector, overcrowding in public facilities, and data security concerns, as well as recent innovations such as the rise of home healthcare and telemedicine. By analyzing these dynamics, this study aims to provide insights for healthcare managers, policymakers, and researchers to inform strategic planning for the healthcare ecosystem in Pune.

Key words: *Pune, healthcare ecosystem, public sector hospital, etc.*

Introduction:

Background: Pune has emerged as a major economic and educational hub in India, leading to increases demand for robust healthcare services. The city's healthcare system is a dual-sector model consisting of government-funded public hospitals and a large, expanding private sector. Despite growth and innovation, healthcare services management in Pune faces significant challenges related to equitable access, cost management, and quality control, which affect patient outcomes and satisfaction. To analyze the current state of public and private healthcare series management in Pune. To identify the key management challenges faced by healthcare providers in the city. To explore the role of digital transformation and innovation in enhancing healthcare services. To evaluate the impact of management strategies on patient satisfaction and quality of care.

Literature review: Theoretical formworks discuss existing management models in healthcare, including quality management frameworks, that is Lean six sigma total quality management patient-centered care models and value-based healthcare. Global and Indian context, provide a brief overview of healthcare management trends in India and globally focusing on digitalization and value-based care.

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Research Methodology:

Research Design: A mixed-methods approach combining qualitative and quantitative research.

Data Collection – Quantitative Surveys were administered to healthcare managers, medical professionals, and patients across a sample of public and private hospitals in Pune. Qualitative Semi structured interviews with hospital administrators' policymakers and representative from healthcare startups and advisory firms

Sampling A stratified random sampling technique can be used to select representative public and private healthcare facilities in urban and peripheral areas of Pune

Data Analysis – Statistical analysis of survey data (e.g. descriptive statistics correlation analysis) and thematic analysis of interview transcription to identify recurring pattern and insights.

Findings and Analysis:

Public Sector Management: Sassoon General Hospital provides free/subsidized medical care to thousands of patients daily and handles over 10,000 outpatients daily, with advanced surgical and critical care units and active involvement in community healthcare programs, national disease control initiatives, and emergency response services.

The study analyzes the management structure, finding mechanism, and resource allocation in government hospitals. Common issues such as overcrowding, long wait times, infrastructure limitations, and workforce shortages are discussed. Evaluate the implementation of public health schemes and their management.

Private sector Management:

Emerging cities, such as Pune and Pimpri Chinchwad, are prime hubs for healthcare case development. Examines the management of multispecialty private hospital boutique clinics and home healthcare services. Analyze patient-centric care model marketing strategies and the use of modern technology to enhance services. Explore influencing patient choices, including quality perception, cost, and specialty access.

Pune is becoming popular for medical tourism as it has tremendous potential. Many multispecialty or single specialty small and medium hospitals are actively participating with advanced technology expertise at an affordable cost. Mainly, two types of patients benefit from NRI visits: those who see their loved ones annually and foreign tourists. Numerous procedures, such as eye surgery and keen or hip replacement cosmetic surgeries, are in higher demand among such patients. The city's air, road, and rail connectivity can be improved further so that patients need not travel here from Mumbai or Delhi.

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Technological innovations in management: Assess the adoption and impact of electronics health records (EHRs), Telemedicine and AI-powered tools. Local examples, such as Pune-based startups and the Philips Healthcare Innovation Center, are highlighted. Discuss the management challenges associated with technological integration such as data security and staff training

Patient satisfaction and quality care: Present findings on patient perceptions of quality, cost-effectiveness, and responsiveness across different healthcare settings. Analyzed the correlation between specific management practices and patient feedback.

Discussion: Synthesis of findings Comparison of management practices and outcomes in Pune's public and private sectors. The strategic implications discuss how identified challenges, such as workforce management and regulatory changes, can be addressed through innovative management strategies. Future trends project future directions for healthcare management in Pune, considering trends such as the integration of big data, personalized care, and sustainability.

Conclusion & Recommendations

Summarize the key insights regarding healthcare services management in Pune

1. Reiterate the need for a balanced and synergistic approach between the public and private sectors to achieve equitable high quality and accessible healthcare for the city population
2. For policymakers, suggest policy interventions to address resource disparities, enhance regulatory oversight of the private sector, and promote digital health infrastructure.
3. For Healthcare Managers; Recommend strategic for improving operational efficiently staff training and patient engagement through it technology and process optimization
4. For Research Propose areas for future investigation such as the long-term impact of digital health interventions and the effectiveness of public private partnership (PPPs) Pune
5. Electronic health record (EHR) systems, such as Medical software tries to HER systems streamline administrative tasks, reduce duplicate date entry, and minimize storage costs associated with paper records. These efficiencies save time and money, improving the accuracy of medical records.
6. Cloud storage HIPAA- complaint cloud storage optional have revolutionized data storage for healthcare practices. The expenses and maintenance burden of in-house storage have been significantly

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A Study on iPhone Product Data from Flipkart Using Python and Power BI At CodeAlpha Company

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ABSTRACT

This study, titled "A Study of iPhone Product Data Analysis Using Python and Power BI at CodeAlpha," *explores customer preferences, pricing trends, and market patterns related to iPhone products on Flipkart. The research focuses on analyzing product attributes, consumer feedback, and pricing strategies by applying data extraction and exploratory data analysis (EDA) techniques. Primary data was collected through web scraping of Flipkart's iPhone listings, covering aspects such as model variations, product pricing, ratings, and customer reviews. The results reveal that iPhone models display significant variability in pricing, largely influenced by features, storage capacity, and customer demand. Consumer sentiment, reflected through ratings and reviews, highlights strong satisfaction with performance and design, while negative opinions primarily stem from high prices and delivery-related issues. Approximately 70% of the analyzed products showed competitive pricing strategies driving customer interest, whereas around 20% of reviews indicated concerns with affordability and service. The findings were visualized using Power BI dashboards, which provided clear insights into pricing distributions, model comparisons, and customer feedback trends. The study concludes with recommendations for businesses to optimize pricing strategies, enhance service quality, and leverage customer feedback for improved decision-making. These insights not only benefit Flipkart and sellers in strengthening their market approach but also demonstrate the effectiveness of combining Python and business intelligence tools for deriving actionable e-commerce insights.*

Keywords: *Flipkart, iPhone, Data Analysis, Customer Preferences, Pricing Trends, Python, Power BI,E-commerce.*

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Introduction : The rapid growth of e-commerce has positioned platforms like Flipkart as key marketplaces for premium smartphones, particularly iPhones. Understanding product-related factors such as pricing, ratings, and availability has become essential for analyzing customer behavior and market dynamics. This study, conducted as

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part of on-job training at CodeAlpha Company, focuses on extracting, analyzing, and visualizing iPhone product data from Flipkart to derive actionable insights that support business decision-making.

In today's competitive digital marketplace, customers are increasingly relying on online reviews, ratings, and comparative pricing before making purchase decisions. For companies and sellers, analyzing such product-level data provides valuable opportunities to optimize pricing strategies, track consumer sentiment, and identify emerging trends. By leveraging advanced tools such as Python for data analysis and Power BI for visualization, businesses can transform raw e-commerce data into meaningful insights that enhance both strategic planning and customer experience.

Python was employed for data extraction and exploratory data analysis (EDA), enabling efficient collection, cleaning, and organization of raw product details. The EDA process revealed critical insights, including variations in pricing across models, rating distributions, and consumer preference trends, while also ensuring data quality and readiness for visualization.The processed dataset was then integrated into Power BI to design interactive dashboards. These dashboards provided clear visualizations of pricing comparisons, customer rating patterns, and product availability, making complex data more accessible and interpretable. By uncovering hidden patterns and highlighting shifts in market trends, the study demonstrates how the integration of Python's analytical capabilities with Power BI's visualization tools can deliver meaningful business intelligence in the e-commerce domain.

Review Of Literature : Despite the growing body of research on e-commerce platforms and consumer behavior, very few studies have concentrated on the real-time extraction and analysis of Flipkart product data, particularly for high-demand products like iPhones. Much of the existing literature relies on readily available or pre-structured datasets, which do not reflect the challenges of working with unstructured, web-based information. In addition, there is limited research on combining Python-driven web scraping and Exploratory Data Analysis (EDA) with Power BI visualization to provide a complete analytical framework.

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Research Procedure :

1. Problem Identification : Recognized the need to analyze Flipkart iPhone product data to understand pricing, ratings, and customer preferences for better insights into consumer behavior.
2. Literature Review : Reviewed existing studies on web scraping, Exploratory Data Analysis (EDA), and data visualization using Power BI.
3. Survey Design : Developed a structured questionnaire using Google Forms (closed-ended and opinion-based questions).
4. Data Collection: Collected primary data from 105 Flipkart users through survey responses. And used secondary data from research papers, journals, and books for theoretical support.
5. Data Analysis: Cleaned and pre-processed the scraped iPhone data using Python. Performed Exploratory Data Analysis (EDA) to identify trends and patterns using Python. Visualized insights using Power BI dashboards for clear interpretation.
6. Interpretation: Drew conclusions on customer satisfaction, dissatisfaction

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areas, and actionable recommendations for improvement.

Research Statement : This study addresses the challenge of unstructured e-commerce data by using Python-based web scraping to extract iPhone product data from Flipkart. After data cleaning and exploratory data analysis (EDA), Power BI dashboards were created to visualize pricing, ratings, and availability, providing actionable insights for data-driven decision-making.

Research Objectives :

1. To collect real-time Flipkart iPhone data using Python.
2. To perform EDA for identifying patterns in pricing, ratings, and brands.
3. To apply Python for web scraping and business analytics.
4. To identify customer challenges and areas for improvement.

Research Design : An Exploratory Research Design has been adopted to analyze iPhone product data from Flipkart. The approach focuses on collecting unstructured online data through Python-based web scraping and examining it using Exploratory Data Analysis (EDA) to identify patterns, trends, and relationships in pricing, ratings, and other product attributes. Exploratory Research Design – Exploratory research aims to investigate a problem or phenomenon in a flexible and open-ended manner to gain deeper insights.

Methods of Data Collection : The study used a mixed-method approach involving both primary and secondary data sources:

Primary Data – Collected through a structured Google Forms survey distributed to 105 Flipkart customers, including students, professionals, and frequent online shoppers. The questionnaire focused on shopping behavior, product satisfaction, delivery experience, and overall perception of Flipkart's services.

Secondary Data – Obtained from books, journals, research papers, and credible online sources related to web scraping, Exploratory Data Analysis (EDA) and data visualization. This supported the survey findings and provided a theoretical framework.

Sampling Method :

- Area: Customers using Flipkart for online shopping across India
- Sampling Type: The sampling method used in this research is **convenience sampling**, ensuring that every Flipkart user in the target population had an equal chance of being selected
- Population: All active online shoppers who provide feedback on products and services.
- Sample Size: 105 respondents

Data Analysis :The data collected through Google Forms from Flipkart users was analyzed using Power BI. The aim was to interpret sentiment trends, customer satisfaction drivers, and areas of dissatisfaction in Flipkart shopping experiences.

Tools Used:

1. Microsoft Excel: Used for initial data cleaning, filtering, sorting, and basic statistical analysis.
2. Python: Used for web scraping and Exploratory Data Analysis (EDA).
3. Power BI: Used for creating interactive dashboards and visual representations

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such as pie charts, bar graphs, and slicers to present customer insights.

Data Dashboard : The Power BI dashboards provides insights into consumer perceptions and experiences related to purchasing iPhones on Flipkart. It combines survey responses with analytical visuals to highlight shopping behavior, trust factors, decision influences, and areas for improvement. The dashboard enables quick understanding of customer sentiments and supports data-driven recommendations for enhancing Flipkart's iPhone purchase process.

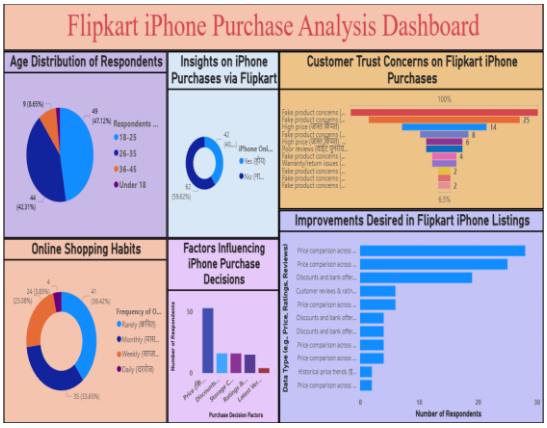
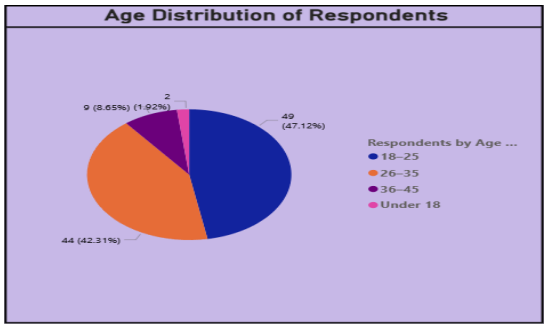


Fig. Power BI Dashboard

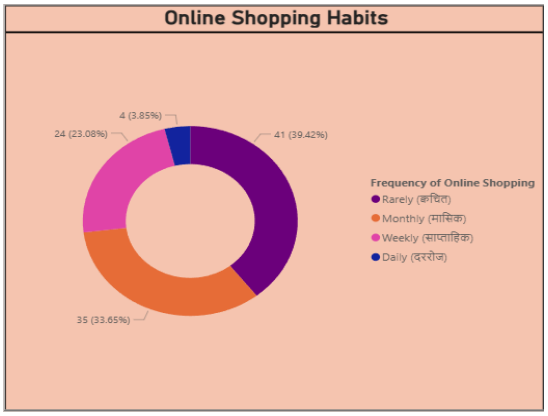
Chart 1 : Age Distribution of Respondents



Source : Primary Data

Interpretation : The chart shows the **age distribution of respondents** in the survey. A majority of participants fall within the **18–25 age group (47.12%)**, followed closely by the **26–35 group (42.31%)**, indicating that most respondents are young adults. Smaller proportions are seen in the **36–45 group (8.65%)** and those **under 18 (1.92%)**, suggesting that Flipkart iPhone purchase insights are primarily shaped by younger customers.

Chart 2 : Online Shopping Habits



Source : Primary Data

Interpretation : The chart shows that most respondents shop online rarely (39.42%) or monthly (33.65%), while 23.08% shop weekly and only 3.85% shop daily. This suggests that although online shopping is widely adopted, it is not yet a daily activity for the majority of users. The dominance of "rarely" and "monthly" habits reflects a preference for occasional purchases, possibly linked to offers, festivals, or specific needs, rather than frequent impulse buying. Overall, the data highlights that Flipkart's customer base is active but still has room for growth in terms of increasing shopping frequency.

Chart 3 : Insights on iPhone Purchases via Flipkart

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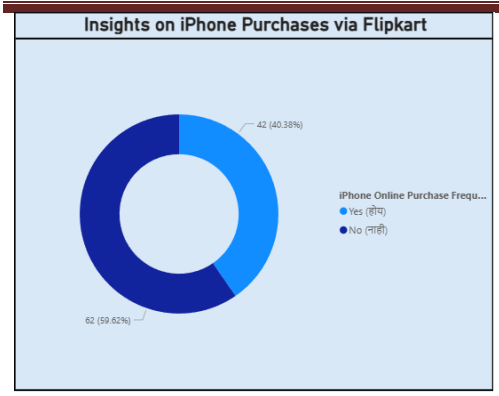
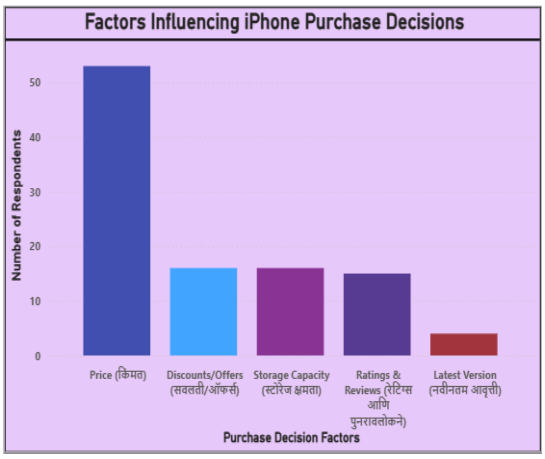


Source : Primary Data

Interpretation : The chart indicates that a majority of respondents (59.62%) have not purchased an iPhone via Flipkart, while 40.38% reported that they have. This highlights that although a significant portion of customers rely on Flipkart for iPhone purchases, there is still a larger group that prefers alternative platforms or offline stores, reflecting potential opportunities for Flipkart to enhance trust, offers, and overall purchase experience to attract more buyers.

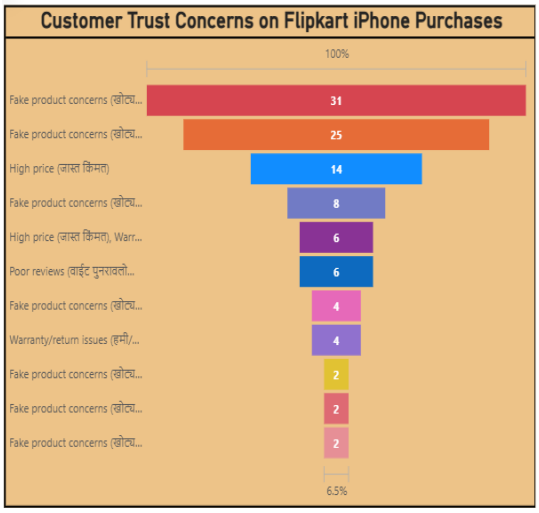
Chart 4 : Factors Influencing iPhone Purchase Decision



Source : Primary Data

Interpretation : The chart shows that **price** is the most significant factor influencing iPhone purchase decisions on Flipkart, with over 50 respondents prioritizing it. Other factors such as **discounts/offers, storage capacity, and ratings & reviews** play a moderate role, while the **latest version availability** has the least impact. This indicates that customers are highly price-sensitive, and affordability combined with attractive offers largely drives their decision-making, whereas product version or upgrades are less influential.

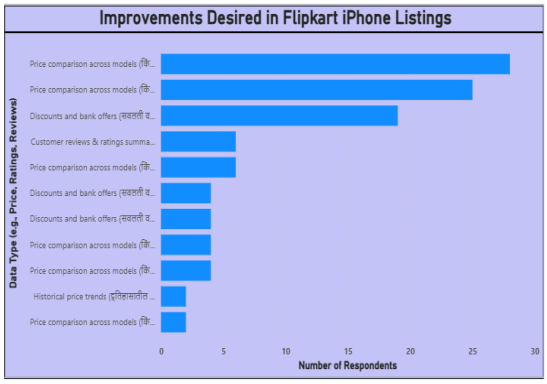
Chart 5 : Customer Trust Concerns on Flipkart iPhone Purchase



Source : Primary Data

Interpretation : Customers believe that **All Sentiment Types are Equally Important** (61%) for companies to study. This indicates that customers understand the value of both positive feedback (for reinforcement) and negative feedback (for improvement). A significant portion also values **Negative (31.4%)** and **Positive (16.5%)** sentiments specifically, showing that critical feedback is seen as particularly crucial for driving change. The chart illustrates the major trust concerns customers face when purchasing iPhones from Flipkart, with **fake product concerns** standing out as the most dominant issue.

Chart 6 : Improvements Desired in iPhone Product Listings



Source : Primary Data

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Interpretation : The chart highlights the key improvements customers desire in Flipkart's iPhone listings. The majority of respondents expressed a strong need for **price comparison across different iPhone models**, making it the most requested improvement, which reflects their sensitivity to pricing and desire to evaluate options before purchase. Following closely, **discounts and bank offers** emerged as another major expectation, showing that financial incentives significantly influence buying decisions and can enhance customer satisfaction. Additionally, a notable portion of respondents wanted **customer reviews and ratings summaries** to be more prominent, indicating the importance of peer feedback in building trust and confidence during purchase decisions. A smaller but relevant group also suggested the inclusion of **historical price trends**, which would allow buyers to track fluctuations and choose the most favorable time to buy.

Findings : The analysis reveals that Flipkart's iPhone purchase market is primarily shaped by young adults aged 18–35, who represent the most active segment of online buyers and drive current purchasing trends. However, despite their strong presence, shopping frequency remains relatively low, with most respondents reporting that they shop rarely or only once a month. This indicates that while adoption of online shopping is well established among younger consumers, the potential to convert occasional buyers into more frequent customers is still untapped. Affordability plays a central role in shaping purchase decisions, as price sensitivity outweighs factors such as storage capacity, reviews, or the availability of the latest models. This highlights that value for money is the most critical driver, and that customers prioritize financial feasibility over novelty or premium features.

At the same time, trust-related concerns act as a significant barrier to purchase confidence. Fear of fake products, doubts regarding authenticity, and high price perception reduce customer willingness to rely on Flipkart for iPhone purchases, even when interest is strong. Customers also express dissatisfaction with issues surrounding warranty and return policies, which contribute to friction and weaken loyalty. Furthermore, the demand for better product listings is clear, with customers strongly preferring features such as price comparisons, clear discount and bank offer details, and summarized reviews to aid informed decision-making. These gaps underline the importance of improving transparency, strengthening authenticity assurance, and enhancing customer experience in order to build trust, encourage repeat purchases, and establish long-term loyalty in the competitive iPhone market.

Suggestions :

1. Strengthen Product Authenticity Assurance: Highlight official Apple partnerships and add stronger verification tags to reduce fake product concerns.
2. Enhance Price Transparency: Introduce price comparison tools and show historical price trends so customers feel confident about getting the best deal.
3. Expand Discounts and Bank Offers: Provide more attractive seasonal deals, exchange offers, and EMI options to address high price sensitivity.
4. Improve Review & Rating Systems: Summarize customer reviews, highlight verified purchases, and display both positive and negative feedback clearly to build trust.
5. Upgrade Customer Support & After- and Sales Service: Simplify return/warranty

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processes and ensure quick resolution of complaints to improve overall customer satisfaction loyalty.

6. Boost Customer Engagement and Shopping Frequency: Encourage more frequent purchases through personalized offers, loyalty programs, and timely notifications to shift buyers from occasional to regular shoppers.

Conclusion : The analysis of Flipkart's iPhone survey and product data reveals several important insights into customer behavior and perceptions while shopping on the platform. A majority of iPhone buyers are young adults (18–35), highlighting that this segment drives online purchasing trends. However, shopping frequency remains largely occasional, with most respondents buying rarely or monthly, which points to untapped potential for growth. Price sensitivity emerged as the strongest influence on purchase decisions, outweighing factors such as storage capacity, reviews, or latest versions. Python-based web scraping and Exploratory Data Analysis (EDA) of Flipkart's iPhone listings highlighted trends in pricing, discount patterns, and seller credibility, offering solutions to concerns around affordability and authenticity. At the same time, trust concerns such as fake product fears, unclear listings, and gaps in warranty/return policies significantly weaken confidence and reduce purchase intentions. Customers strongly value greater transparency, particularly in pricing, discounts, review summaries, and authenticity assurance, showing that improved information and reliability are key to building loyalty.

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Accelerating Transformation: Strategic Change and Organizational Development in Pune's Auto Ancillary SMEs

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Abstract

Pune's auto ancillary sector stands at a tipping point, confronted by disruptive technological change, evolving customer preferences, and increasing integration with global value chains. Small and Medium Enterprises (SMEs) in this sector are under mounting pressure to adapt to the rise of electric vehicles (EVs), address technical and digital skills shortages, manage volatile input costs, secure affordable financing, and meet stringent quality and certification requirements. This study investigates how strategic change outcomes, enabled by key organisational development (OD) practices, influence the resilience and long-term competitiveness of these SMEs. Employing a mixed-methods approach, the research draws upon a primary survey of 42 SME leaders and in-depth qualitative feedback to identify seven critical challenges and the effectiveness of corresponding OD interventions. Results show that SMEs embracing structured OD—such as product portfolio reviews, modular upskilling, digitalisation, and collaborative cluster initiatives—demonstrate stronger growth, adaptability, and readiness for global integration. Practical recommendations are provided for policymakers and SME leaders, emphasising the importance of a proactive, holistic approach to OD in navigating industry transformation.

Keywords: Strategic change, organisational development, SMEs, auto ancillary, Pune, electric vehicles, skills gap, supply chain management, etc.

1. Introduction

The Indian automotive sector is a cornerstone of the country's manufacturing economy, accounting for significant contributions to GDP, export earnings, and employment. Within this broad ecosystem, the auto ancillary industry is vital—supplying everything from engine components to electronics and body systems to major automotive manufacturers. Pune, often called the "Detroit of India," is recognised for its dense cluster of auto

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ancillary SMEs that supply both domestic giants like Tata Motors and Bajaj Auto, as well as global OEMs operating in India (Joshi & Shekhar, 2019).

However, this sector is currently experiencing unprecedented disruption. The global pivot towards electric vehicles (EVs), increased enforcement of environmental and quality standards, and the push for digitalisation are compelling SMEs to rethink their business models. The traditional focus on parts for internal combustion engines (ICE) is rapidly losing relevance, putting many established SMEs at risk of obsolescence (Chatterjee & Basu, 2020).

In addition to these technological shifts, SMEs in Pune face chronic challenges: acute shortages of skilled technical and digital talent, limited access to affordable credit, volatile prices for raw materials and components, and logistical or infrastructural bottlenecks that add to operational costs and delays (Patil & Kulkarni, 2021; Dey & Singh, 2020).

In this environment, **Organisational Development (OD)**—the process of systematically improving an organisation's capabilities through training, restructuring, technology adoption, and collaborative partnerships—has become a critical lever for survival and growth (Sahoo & Mishra, 2017). This study seeks to answer a central question: **How do strategic change outcomes, enabled by OD interventions, shape the competitiveness and resilience of SMEs in Pune's auto ancillary sector?**

This research is distinctive in its holistic approach, examining not only individual challenges and responses, but also the connections between strategic change, OD initiatives, and business outcomes such as growth, innovation, and global readiness.

2. Literature Review

2.1 Strategic Change in Indian SMEs

Strategic change refers to purposeful and significant adjustments in an organisation's direction, structure, or processes to respond to emerging threats or opportunities (Deshmukh & Muralidharan, 2019). For Indian SMEs, such change is often driven by external shocks—such as regulatory shifts, new technology, or changing customer demands. SMEs typically face severe constraints in financial resources, skilled human capital, and access to cutting-edge technology, which makes proactive strategic change challenging (Kale & Arora, 2020).

The transition to electric mobility is a major strategic inflection point. SMEs traditionally focused on ICE components must diversify into products relevant to EVs (like battery modules, electronics, and software) or risk rapid decline. Research shows that SMEs which adapt quickly—by investing in new skills, technologies, and partnerships—are more likely to sustain their market position (Dwivedi & Sharma, 2022).

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2.2 Organisational Development (OD) Practices

OD is a systematic approach to improving organisational effectiveness and adaptability through planned interventions. For SMEs in the auto ancillary sector, common OD practices include:

- **Training and Reskilling:** Regular upskilling of staff to meet new technological and digital requirements, such as skills in battery systems, embedded software, and Industry 4.0 technologies (Gupta & Gokhale, 2018).
- **Digitalisation:** Adoption of enterprise resource planning (ERP) systems, traceability tools, and automation solutions to enhance process efficiency and data-driven decision-making (Sahoo & Mishra, 2017).
- **Collaborative Partnerships:** Engaging in joint R&D labs, consortium-based bidding, and partnerships with educational institutions to overcome the limitations of scale and access to expertise (Bansal & Aggarwal, 2019).

Studies show that SMEs with a culture of continuous learning, innovation, and openness to change are more resilient in the face of disruption (Chaudhary & Bansal, 2021).

2.3 Key Challenges in the Auto Ancillary Sector

A review of recent literature highlights seven persistent and interconnected challenges:

1. **Technological Shifts:** The rise of EVs and advanced electronics is making traditional ICE-focused products obsolete, creating a high risk for SMEs that fail to diversify (Chatterjee & Basu, 2020).
2. **Skills Gap:** There is a severe shortage of staff with expertise in battery systems, power electronics, software, and digital manufacturing (Chaudhary & Bansal, 2021).
3. **Access to Finance:** SMEs find it difficult to secure affordable loans or investment for modernisation, which slows down adoption of new technologies and processes (Rathod, 2022).
4. **Input Cost Volatility:** Fluctuations in steel, electronics, and imported components directly impact SME margins and planning (Patil & Kulkarni, 2021).
5. **Quality and R&D Gaps:** Many SMEs lack the in-house capabilities to meet global OEMs' requirements for product testing, traceability, and certification (Rane & Potdar, 2018).

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6. **Infrastructure and Logistics:** Rapid urban growth in Pune has strained local logistics and warehousing, leading to increased costs and delays (Dey & Singh, 2020).
7. **Global Value Chain (GVC) Integration:** Rising expectations for digital traceability and ESG (environmental/social/governance) compliance are becoming prerequisites for participating in global supply chains (Sharma & Sawant, 2022).

2.4 Research Gap

Existing studies often focus on one or two of these challenges in isolation or describe OD practices without connecting them explicitly to business outcomes. There is a need for integrated, empirical research on how coordinated OD responses to multiple strategic challenges affect SME performance, especially in competitive clusters like Pune.

3. Research Methodology

3.1 Research Design

A cross-sectional, mixed-methods approach was chosen to capture both the breadth of SME responses and deeper qualitative understanding. This design enables the study to quantify patterns while capturing the context and nuance behind SME choices.

3.2 Sampling and Data Collection

A purposive sample of 50 SMEs operating in Pune's auto ancillary sector was selected to ensure diversity in firm size, ownership structure, and product focus. Data collection was conducted through structured questionnaires (both online and in-person) administered to owners and senior managers between February and March 2024. Out of 50 SMEs contacted, 42 provided valid and complete responses (an effective response rate of 84%).

3.3 Survey Instrument

The survey comprised three main sections:

- **Firm Demographics:** Capturing size, years in operation, ownership, and product range.
- **Strategic Challenges:** Respondents rated the severity of seven key challenges on a Likert scale, based on their experience.
- **OD Actions:** Multiple-choice and open-ended questions assessed which OD interventions had been undertaken, with space for qualitative feedback on obstacles and support needs.

3.4 Data Analysis

Quantitative data were analysed with descriptive statistics, cross-tabulations, and Pearson correlation (using SPSS v28) to identify relationships between the number of

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OD interventions and performance outcomes. Qualitative responses were thematically coded to distil common barriers, support needs, and innovative practices.

3.5 Limitations

The study's findings are specific to Pune and may not generalise to all Indian auto clusters. The sample size, while robust for a single region, may not capture the full diversity of the sector. Self-reported data may include response bias, though qualitative triangulation helps mitigate this.

4. Results

4.1 Respondent Profile

Table 1: Demographic Profile of Respondent SMEs (N = 42)

Variable	Categories	% of Respondents
Firm Size	Small (<50 employees)	62%
	Medium (50–250 employees)	38%
Ownership Type	Family-owned	74%
	Partnership/Private Limited	26%
Years in Operation	<5 years	12%
	5–10 years	21%
	11–20 years	45%
	>20 years	22%

Interpretation:

The respondent pool mainly comprises small, family-owned firms with substantial operational experience (over two-thirds have been active for more than a decade). This maturity provides a strong foundation for assessing strategic change responses in a real-world context.

4.2 Severity of Strategic Challenges

Table 2: Perceived Severity of Strategic Challenges

Challenge	% Rated Severe/Critical	Rank
Technology shift (EVs, software)	86%	1
Skills shortage & reskilling	78%	2
GVC integration	69%	3
Finance for modernisation	67%	4
Quality & R&D gaps	64%	5
Input cost volatility	60%	6
Infrastructure/logistics	50%	7

Interpretation:

A significant majority of SMEs (over 75%) perceive technological shifts and skills shortages as their most severe challenges.

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The high ranking for GVC integration and finance highlights mounting pressure to upgrade to global standards and secure capital for modernisation. Infrastructure, while impactful, is less pressing than the internal capability gaps facing these firms.

4.3 Organisational Development Actions Undertaken

Table 3: Organisational Development Actions Reported by SMEs

OD Intervention	% of SMEs	Examples/Notes
Product portfolio review	57%	Phasing out ICE-focused components, evaluating EV relevance
Modular training/bootcamps	49%	Skilling in EV battery handling, digital manufacturing
Supplier diversification	55%	Multi-sourcing steel, electronics, risk analytics
ERP-lite traceability	32%	Implementing QR codes, lightweight ERP systems
Shared R&D/Cluster labs		testing facilities for EV components
Consortium bids	19%	Bidding collectively for Tier-1 OEM contracts
Cross-functional skill pods	43%	In-house multi-department reskilling

Interpretation:

More than half of SMEs have engaged in re-evaluating their product portfolios and diversifying suppliers—a clear response to technological and market volatility. However, digitalisation (ERP adoption) and shared R&D efforts remain relatively limited, representing key opportunities for further OD enhancement.

4.4 Outcomes of OD Actions

Table 4: Comparative Outcomes of SMEs Based on Number of OD Interventions

Performance Indicator	SMEs with ≥4 OD Actions	SMEs with <4 OD Actions
2-Year Revenue Growth (Mean)	14%	5%
Staff Retention (attrition)	9%	18%
Skill Diversity	High	Moderate/Low
Certification	71%	32% ready

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Readiness	ready	
Crisis Response Speed	2–4 weeks	6–8 weeks

Interpretation:

SMEs that have implemented four or more OD interventions outperform others across all key metrics—achieving higher revenue growth, lower turnover, greater skill diversity, and faster crisis response. This indicates that a comprehensive approach to OD greatly enhances resilience and competitiveness.

4.5 Qualitative Insights

Table 5: Thematic Insights from Qualitative Responses

Theme	Example Responses
Barriers	"We cannot afford high-end EV testing equipment." "Trained manpower leaves for MNCs."
Support Needed	"Government should subsidise EV component training." "Need faster approval for bank loans."
Innovative Practices	"Partnered with local engineering colleges for live projects." "Formed raw material buying groups to hedge volatility."

Interpretation:

Respondents highlighted persistent financial and talent barriers, while also pointing to innovative solutions such as industry-academic partnerships and collaborative procurement. The demand for government support and streamlined finance is strong, reinforcing the need for targeted policy intervention.

5. Discussion

The results provide robust evidence that **proactive and structured OD interventions are a major determinant of SME success during times of industry disruption**. SMEs that systematically review and adapt their product portfolios, invest in skill development, diversify suppliers, and embrace digitalisation are better equipped to withstand and even benefit from technological and market shifts.

A key finding is the significant gap between SMEs that undertake multiple coordinated OD actions and those that do not. The former group consistently achieves higher growth, lower attrition, and greater readiness for global contracts. This aligns with prior research, which emphasises the value of agility and organisational learning in turbulent times (Deshmukh & Muralidharan, 2019; Kale & Arora, 2020).

However, the study also highlights that certain OD practices—particularly digital transformation, shared R&D facilities, and consortium-based bidding—are not widely adopted. This represents a missed opportunity for collective capacity building, especially given the challenges of cost, scale, and compliance in meeting global standards.

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Finance remains a critical constraint. Despite government schemes, many SMEs report difficulties in accessing funds needed for modernisation and certification, echoing Rathod's (2022) analysis. The qualitative feedback further reinforces the urgency for policy support around skill development, easier access to credit, and infrastructure upgrades.

6. Conclusion

This study demonstrates that **strategic change outcomes—when supported by comprehensive OD interventions—can significantly strengthen the competitiveness and resilience of Pune's auto ancillary SMEs**. Firms that invest in training, technology, supply chain diversification, and partnerships are best positioned to navigate technological shifts, access global markets, and sustain long-term growth.

Recommendations for Policymakers and Industry Bodies:

- **Accessible Financing:** Streamline SME access to loans and modernisation funds; promote blended finance models.
- **Skill Development:** Expand modular and digital training programs tailored to EVs and emerging technologies.
- **Cluster-Based Support:** Foster shared R&D/testing labs, encourage consortium-based bids, and provide infrastructure for group procurement.

Recommendations for SME Leaders:

- Adopt a proactive and holistic approach to OD—integrating product innovation, workforce development, and digital transformation.
- Leverage external partnerships, especially with academic and technical institutions, to bridge skill and technology gaps.
- Engage actively in cluster initiatives to access resources and opportunities unavailable to individual firms.

Future Research:

Further studies could expand to other automotive clusters in India, compare longitudinal impacts of OD interventions, or use case studies to explore best practices in greater depth.

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Artificial Intelligence in Indian Education: A Conceptual Study

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Abstract

Artificial Intelligence (AI) is rapidly transforming the educational sector worldwide by personalizing learning, automating administrative tasks, and enhancing decision-making for educators. In India, where the education system faces structural challenges such as unequal access, high student–teacher ratios, and infrastructural constraints, AI holds unique potential. This paper provides a ***conceptual and secondary-data-based exploration*** *of AI's role in education with an Indian perspective. It examines the applications, opportunities, and challenges of AI adoption, supported by secondary data drawn from government reports, industry analyses, and academic studies. It concludes with policy suggestions for sustainable integration of AI in Indian education while maintaining inclusivity and ethics.*

Keywords*: Artificial Intelligence, Indian Education System, Personalized Learning, EdTech, Digital India, Conceptual Paper*

Introduction

Artificial Intelligence (AI) has moved from being a futuristic concept to a core technology shaping everyday lives. In education, AI promises to transform teaching, learning, and administration. Globally, the AI in education market was valued at USD 4 billion in 2022 and is projected to grow at a CAGR of over 35% (MarketsandMarkets, 2023). In India, the adoption of AI in education is closely aligned with the **National Education Policy (NEP) 2020**, which emphasizes digital learning, personalized education, and data-driven decision-making (Government of India, 2020).

The Indian education system is one of the largest in the world, serving over 250 million school-going students and more than 37 million higher education students (AISHE, 2022). However, it is also marked by challenges such as disparities in quality, shortage of trained teachers, and digital divides between rural and urban areas. AI can address many of these gaps by offering adaptive learning systems, intelligent tutoring, and predictive analytics.

This paper is **conceptual** in nature and based on **secondary data**. It examines the applications of AI in education, explores opportunities specific to the Indian context, identifies key challenges, and suggests future directions.

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Literature Review

Global Trends in AI and Education

Scholars have documented AI's applications in education across four domains: (1) **personalized learning**, (2) **administrative efficiency**, (3) **learning analytics**, and (4) **student support systems** (Chen et al., 2020). Intelligent Tutoring Systems (ITS) like Carnegie Learning and platforms like Coursera use AI to adapt to learners' pace and preferences. Globally, universities are also using AI to streamline admissions, plagiarism detection, and predictive analytics for student retention.

AI in the Indian Context

Indian research highlights that EdTech platforms such as **Byju's, Vedantu, and Unacademy** are early adopters of AI tools for personalization, assessment, and content delivery (NASSCOM, 2021). The government's **AI for All initiative** by CBSE and Intel aims to build AI literacy from school levels. Moreover, NEP 2020 positions AI as a tool for bridging learning gaps and creating **holistic, flexible, multidisciplinary education** (Government of India, 2020).

Conceptual Gaps

While empirical studies exist on AI adoption in Indian EdTech, there is limited conceptual exploration of how AI can be scaled across India's diverse socio-economic settings. This paper contributes by framing AI in education not just as a technological advancement but as a **social and systemic intervention** in India.

Methodology

This study is **conceptual** and relies on **secondary sources** such as government policy documents, industry reports, academic journal articles, and press releases. Data has been drawn from:

- All India Survey on Higher Education (AISHE) reports
- National Education Policy 2020
- Reports from NITI Aayog, NASSCOM, and international agencies such as UNESCO
- Peer-reviewed journal articles (2018–2024)

Since the purpose is not empirical testing but **theoretical discussion and synthesis**, the study adopts a **conceptual review methodology**, analyzing existing knowledge and aligning it with the Indian educational context.

Applications of AI in Education

1. Personalized Learning

AI algorithms can analyze student performance, identify weak areas, and recommend customized resources. For instance, platforms like Byju's deploy adaptive learning paths tailored to students'

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grasping levels. This approach addresses the high student–teacher ratio in India (1:32 at the school level vs. global average of 1:16) (AISHE, 2022).

2. Intelligent Tutoring Systems (ITS)

ITS simulate one-on-one human tutoring by giving instant feedback and hints. In India, AI-powered platforms can supplement classroom teaching, especially in rural and low-resource schools where teachers often manage multiple subjects.

3. Learning Analytics and Early Intervention

AI tools analyze large volumes of student data to identify at-risk learners. Predictive analytics can help teachers intervene early, reducing dropouts. For example, NITI Aayog's *National AI Strategy* emphasizes predictive analytics for higher education dropout prevention (NITI Aayog, 2018).

4. Administrative Automation

From attendance to grading, AI reduces teachers' non-teaching workload. This is critical in India, where teachers spend nearly 40% of their time on non-academic tasks (UNESCO, 2021).

5. Inclusive Education

AI enables assistive technologies for students with disabilities, such as speech-to-text, real-time translation, and AI-based sign-language recognition. In multilingual India, AI-powered translation tools can support education in mother tongues, as envisioned by NEP 2020.

Opportunities in the Indian Context

1. **Scaling Quality Education**
   AI can deliver high-quality resources to remote areas, aligning with Digital India initiatives. With internet penetration reaching rural India, AI-enabled content delivery has the potential to democratize access.
2. **Bridging Teacher Shortage**
   India faces a shortage of over 1 million teachers (Ministry of Education, 2021). AI-based tutoring systems and automated grading can partially reduce this gap.
3. **Supporting Multilingual Education**
   With 22 official languages and hundreds of dialects, India needs multilingual educational support. AI-powered translation, Natural Language Processing (NLP), and voice-based systems can expand NEP 2020's goal of mother-tongue instruction.
4. **Policy Push for AI Integration**
   Government initiatives such as **PM eVidya, SWAYAM, and DIKSHA platforms** integrate AI for content recommendation and adaptive learning.
5. **Cost Reduction through EdTech**
   Low-cost AI-driven apps are increasing accessibility for middle- and low-income families. Indian startups are leading

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innovations by providing affordable personalized learning.

Challenges of AI in Indian Education

1. **Digital Divide**
   Despite progress, only 37% of Indian households have internet access (National Sample Survey, 2021). Rural-urban disparities pose a barrier to AI adoption.
2. **Equity and Access**
   AI may widen socio-economic divides if only privileged groups access its benefits. The risk of "AI elitism" needs addressing.
3. **Ethical Concerns**
   Issues of data privacy, algorithmic bias, and misuse of student data are significant. India lacks a comprehensive legal framework for AI in education.
4. **Teacher Resistance and Training**
   Many teachers lack training in digital pedagogy. Without proper orientation, AI tools may be underutilized.
5. **Language and Cultural Context**
   AI models are often developed in English, which limits usability in India's diverse linguistic landscape

Policy Implications

1. **National AI Curriculum**: Integrating AI literacy from school level, as piloted by CBSE.
2. **Teacher Training Programs**: Building capacity for AI-based pedagogy.
3. **Public-Private Partnerships**: Collaborations between government, startups, and tech companies to scale AI solutions.
4. **Inclusive AI Policies**: Ensuring tools are multilingual, affordable, and accessible to marginalized communities.
5. **Ethical Frameworks**: Establishing guidelines for data usage, transparency, and fairness in educational AI.

Discussion

AI in education represents both **technological innovation** and a **social opportunity** for India. While global experiences show the transformative impact of AI, India must adapt solutions to local realities—large population, linguistic diversity, and infrastructural limitations. The challenge is not just adoption but **integration with equity**. Conceptually, AI should be seen as a **complementary tool** rather than a substitute for human teachers.

Conclusion

AI in education holds immense promise for India's future. It can democratize access, personalize learning, and bridge systemic gaps if implemented thoughtfully. However, challenges related to equity, teacher readiness, and ethics must be addressed. The path forward requires a **balanced approach**

combining government policy, private innovation, and community participation.

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Artificial Intelligence for Responsible Travel Experience: Transforming Digital Marketing Towards Sustainable Adventure Tourism

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Abstract

Adventure tourism has been revolutionized by artificial intelligence (AI), which was previously used by marketers to enhance personalization and operational efficiency. Now, AI is being adopted by destinations to create responsible marketing models aligned with sustainability goals (UNESCO, 2023). This study investigates how adventure tourism marketing is being transformed by AI to foster responsible and sustainable travel experience. Secondary data from global tourism organizations, scholarly articles, and case reports were analyzed to explore the relationship between AI, marketing, and sustainability (UNWTO, 2022). Findings reveal that adventure tourism is being reshaped by predictive analytics, digital storytelling, and AI-assisted environmental monitoring (Gretzel & Sigala, 2020). The promotion of responsible travel practices is strengthened when AI is ethically managed. The study concludes that digital marketing in adventure tourism can remain sustainable only if AI is applied ethically, balancing commercial benefits with environmental conservation (World Economic Forum, 2024).

Keywords*: artificial intelligence, Tourism, Digital Marketing, etc.*

1. Introduction

1.1 Background: Adventure tourism is increasingly recognized as one of the fastest-growing segments of global travel. It has evolved from being driven by human guides to being shaped by intelligent data systems (UNWTO, 2022). The integration of AI into the tourism industry is motivated by the need for personalization, operational efficiency, and sustainability (OECD, 2021). Machine learning models and predictive algorithms are now used to analyze traveler data, forecast demand, and deliver customized marketing messages (Gretzel & Sigala, 2020). Destination marketing has therefore been transformed where outreach and engagement are managed not only by human marketers but also by automated, intelligent systems (Crawford, 2021).

1.2 Problem Statement

Balancing sustainability with technological advancement remains a central challenge (Anderson & Rainie, 2022). While AI-based marketing once aimed to boost visitor

numbers, it can also promote over tourism and strain fragile ecosystems (Buhalis & Amaranggana, 2021). This research examines how AI can be integrated ethically so that competitiveness and environmental stewardship coexist in tourism promotion (UN Environment Programmed, 2022).

1.3 Purpose of the Study

The purpose of this study is to examine the transformation caused by AI in adventure tourism marketing, with an emphasis on sustainability and ethical marketing (UNESCO, 2023).

1.4 Research Objectives

1. To examine how AI technologies influence adventure tourism marketing.
2. To assess AI's role in promoting sustainable and responsible tourism.
3. To identify opportunities and challenges in implementing AI for tourism marketing.

1.5 Significance of the Study

Although many studies have explored technology and sustainability, few focus on adventure tourism experience (Gössling et al., 2020). This paper offers insights for policymakers, educators, and professionals by aligning AI innovation with the UN Sustainable Development Goals (SDGs) (UNWTO, 2022; UNESCO, 2023).

2. Theoretical Background

2.1 Technological Determinism

Technological determinism suggests that technology shapes human behavior and social systems (Bostrom, 2017). In tourism, AI applications have altered communication and management by automating decisions once made manually. Algorithms now optimize marketing outcomes that were previously dependent on intuition (Crawford, 2021).

2.2 Sustainable Marketing Theory

Sustainable marketing theory integrates ecological and ethical considerations into business strategy (Schwab, 2016). AI enables continuous monitoring of consumer behavior, promoting eco-friendly messages and minimizing wasteful advertising (World Economic Forum, 2024). Businesses are no longer passive observers of sustainability trends but proactive participants using AI for ethical decision-making (UNESCO, 2023).

2.3 Experience Economy Theory

According to Pine and Gilmore (1999), value is created through memorable experiences rather than products alone. AI now personalizes adventure tourism experiences based on preferences, past travel, and environmental conditions, thereby deepening traveler engagement (Gretzel & Sigala, 2020).

3. Research Methodology

3.1 Research Design

A qualitative exploratory design was employed to interpret the interaction between AI, marketing, and sustainability (OECD, 2021). This flexible design accommodates

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rapidly evolving technological trends in tourism (UNWTO, 2022).

3.2 Data Collection

Data were collected from secondary sources such as UNESCO, UNWTO, OECD, and peer-reviewed studies (UNESCO, 2023; UNWTO, 2022). Case examples from Nepal, Costa Rica, New Zealand, and Iceland were analyzed to illustrate how AI tools are used to manage sustainability in adventure tourism.

3.3 Data Analysis

Thematic analysis identified four dominant themes: personalization, predictive analytics, ethical governance, and sustainable management (Buhalis & Amaranggana, 2021). Interpretive analysis was prioritized over numerical outcomes to reveal underlying patterns (Gössling et al., 2020).

3.4 Limitations

As this research relied on secondary data, it lacked first-hand perspectives from travelers. Future studies should employ quantitative and field-based approaches to validate these insights (UN Environment Programmed, 2022).

4. Analysis and Discussion

4.1 AI in Predictive Marketing

AI systems forecast tourist preferences by analyzing large datasets from reviews and social media (Gretzel & Sigala, 2020). New Zealand and Iceland use predictive analytics to manage visitor flow, ensuring balanced distribution and sustainability (UNWTO, 2022).

4.2 Case Applications

1. New Zealand: Sentiment analysis ensures campaigns respect indigenous culture (World Economic Forum, 2024).
2. Costa Rica: AI recommendation engines support low-carbon tourism (UN Environment Programmed, 2022).
3. Nepal: Predictive mapping tools enhance trekking safety (UNESCO, 2023).
4. Iceland: Machine learning helps prevent over tourism (OECD, 2021).

4.3 AI in Digital Storytelling

AI-driven storytelling analyzes engagement data to refine sustainability narratives. Emotional AI adjusts tone based on empathy or excitement, creating personalized messages (Crawford, 2021).

4.4 Environmental Monitoring

Smart sensors and data platforms continuously record environmental indicators such as waste levels and biodiversity (UN Environment Programmed, 2022). These insights allow operators to adapt strategies immediately, reducing ecological harm.

4.5 Ethical and Privacy Issues

AI raises ethical concerns about bias and privacy (UNESCO, 2023). Transparent algorithms and consent-based data use are essential for trust (Anderson & Rainie, 2022).

4.6 Conversational AI

Voice assistants like **Alexa and Siri** now recommend eco-friendly adventure options, embedding sustainability within user interaction (World Travel and Tourism Council, 2024).

5. Findings

1. AI has enhanced marketing precision by predicting traveler behavior.
2. Predictive systems help distribute tourists evenly, mitigating over tourism (UNWTO, 2022).
3. Personalization tools promote sustainable choices (Gretzel & Sigala, 2020).
4. Real-time monitoring supports environmental conservation (UN Environment Programmed, 2022).
5. Ethical AI policies foster transparency and inclusivity (UNESCO, 2023).

6. Conclusions

AI's integration into adventure tourism is transforming sustainability efforts. Automated systems have unified efficiency with environmental ethics (World Economic Forum, 2024). The study concludes that AI shifts marketing from profit-driven to sustainability-oriented practices. However, ethical oversight and inclusive governance remain critical (UNESCO, 2023). Collaboration among governments, academia, and industries will ensure that AI enhances rather than endangers ecological and cultural integrity (Gössling et al., 2020).

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A Study on the Role and Impact of Data Analysis in Decision-making at AIS Solutions Pvt.Ltd.Pune

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ABSTRACT

The present study focuses on understanding the role and impact of data analysis in decision-making at AIS Solutions Pvt. Ltd., Pune. In today's data-driven environment, organizations rely heavily on analytics to improve accuracy, efficiency, and strategic outcomes. The research aims to examine how data analysis is currently being used within the company, identify the challenges faced by employees and interns in applying analytical techniques, and evaluate its overall effect on business decisions. The study follows a descriptive research design, using both primary and secondary data. Primary data was collected through structured questionnaires administered to interns and employees, while secondary information was gathered from company reports, research articles, and online resources. The collected data was analyzed using Microsoft Excel and Power BI dashboards to derive meaningful insights. Findings reveal that while interns and employees actively use data analysis, managerial participation remains limited. Lack of training, technical difficulties, and restricted access to resources were identified as major barriers. Moreover, ineffective data analysis was found to have a significant negative impact on decision-making quality.The study concludes that strengthening training programs, improving managerial involvement, and promoting a data-driven culture are essential for leveraging the full potential of analytics. The research provides practical insights that can help the organization enhance its decision-making process and long-term competitiveness.

Keywords: *Data Analysis, Decision-Making, Business Analytics, Data-Driven Culture.*

Introduction :

The study titled "The Role and Impact of Data Analysis in Decision-Making at AIS Solutions Pvt. Ltd. Pune" emphasizes the growing importance of analytics in today's data-driven environment. Organizations now depend on data analysis to achieve accuracy, efficiency, and better strategic outcomes. At AIS Solutions Pvt. Ltd. Pune data analysis is being increasingly adopted by interns and

employees, yet challenges such as limited managerial participation, lack of training and restricted access to resources continue to affect its effectiveness. This research aims to examine how data analysis is currently utilized within the company, identify barriers faced in its implementation, and evaluate its overall impact on decision-making. The findings are expected to provide insights that will help the organization strengthen its data-driven culture and enhance long-term competitiveness.

Review Of Literature :

1. Role of Data Analytics in Business Decision Making Dr. Vijai Tiwari Dept. of Commerce S. S. College, Shahjahanpur, Uttar Pradesh ISSN 2583-6633 Vol.03, No.1, August, 2022 _Written as Data analytics plays a pivotal role in modern business decision-making by enabling organizations to convert raw data into valuable insights.This research explores the impact of data analytics on enhancing operational efficiency, improving customer engagement and gaining competitive advantages.
2. Role of Data Analytics in Business Decision Making Dr. Vijai Tiwari Knowledgeable Research (An International Peer-Reviewed Multidisciplinary Journal) ISSN 2583-6633 Available Online: http://knowledgeableresearch.com/Vol.03, No.1, August, 2024Written as_The importanceof dataanalytics in business decision making cannot be overstated. With theexponential growthof datain recentyears, organizationsare nowfaced withan unprecedented amount of information that can be leveraged to inform business strategy. Data analytics provides a powerful tool for extracting insights from this data, enabling companies to identify trends, patterns, and correlationsthat maynot beimmediately apparent.By applyingadvanced statistical and computational techniques to large datasets, businesses can uncover hidden relationships and gain a deeper understanding of their customers, markets, and operations.
3. The Effect of the Characteristics of AIS on the Decision-Making Process, indian Journal of economics and Business, Hussein Jaleel , Ali Alfartoosi ,Vol 21 No. 3(July,2022)written as _Making Decision is a part of a daily routine and one of the main functions of management. They are integrated tasks and control makes the Organizations significant decisions. The Decision-making process involves the selection of the best course of action. The management justifies the effectiveness

of various alternatives based on the data.

4. Ferrari, A., & Russo, M. (2019).*Analyzing data with Power BI and Power Pivot for Excel.* Microsoft Press.The book explains how Power BI enables users to transform raw data into meaningful insights through interactive dashboards and visualizations. It covers techniques for connecting to data sources, data modeling, and creating reports that support informed decision-making and business intelligence initiatives.
5. "Analysis and Design of Visualization of Educational Institution Database using Power BI Tool" – Mandava Geetha Bhargava, K. Tara Phani Surya Kiran, &DuvvadaRajeswara Rao, Global Journal of Computer Science and Technology, 0975-4172, Issue 4 Version1.0,2018 Written as *Data Visualization* – "Data visualization is a process of making understand the significance of data through visual context, and it is a part of analytics. There are several techniques to visualize the data such as interactive and dynamic elements like plots, graphs, slicers, stacked column charts, histogram, bar charts, tables, and matrix. This paper focused on interactive data visualization through Microsoft Power BI, a suite of business intelligence and analytics tools for analyzing data and sharing insights via dashboards.

Research Design :The present study follows a descriptive research design, as it aims to describe and analyze the current use of data ointerns and the impact of ineffective data analysis on decision-making at AIS Solutions Pvt. Ltd. Pune. The descriptive design is suitable because the study does not manipulate variables but seeks to gather insights from respondents' experiences and perceptions.

Descriptive Research Design – Descriptive research aims to describe a population, situation, or phenomenon accurately and systematically.

Research Statement :At AIS Solutions Pvt. Ltd., Pune, data analysis is a vital tool for informed decision-making. However, many interns and employees face challenges in effectively applying analytical techniques, which creates a gap between data insights and actionable business decisions. This study aims to identify and address these gaps, helping to improve the application of data analytics in the decision-making process.

Research Objectives :

1. To analyze the current use of data analysis in the decision-making process at AIS Solutions Pvt. Ltd., Pune.

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2. To identify the key challenges encountered by interns and employees in applying data analytical techniques.
3. To evaluate the impact of ineffective data analysis application on the quality of business decisions.

Methods of Data Collection :The study used a mixed-method approach involving both primary and secondary data sources

Primary Data – Primary data refers to the first-hand information collected directly from respondents. In this study, a structured questionnaire was distributed among interns and employees of AIS Solutions Pvt. Ltd. to understand their current practices of data analysis, challenges in applying analytical techniques, and opinions on its effectiveness in decision-making.

Secondary Data – Secondary data refers to information that is already available from published sources. For this project Secondary data was collected from company reports, research articles, academic journals and online resources related to the role of data analytics in decision-making. This helped provide background knowledge and support to the primary findings.

Sampling Method :

ampling is the process of selecting a group of respondents from the entire population to represent the study. For this project Convenience sampling was used, as interns and employees of AIS Solutions Pvt. Ltd. were easily accessible during the OJT period. Around 50–100 respondents were targeted, ensuring diversity in roles and experience levels.

Research Procedure :

1. **Problem Identification:**
   The research begins by identifying the gap between data insights and business decision-making at AIS Solutions Pvt. Ltd. Pune.
2. **Literature Review:**
   Relevant studies, reports and articles are reviewed to understand existing knowledge and practices of data analysis.
3. **Survey Design:**
   Developed a structured questionnaire using Google Forms.
4. **Data Collection:**
   Primary Data collected from interns and Employes.
5. Used secondary data from research papers, journals, books and websites for theoretical support.
6. **Data Analysis:**
   Primary data collected with the help of Structured Questionnaire and it is analysed using Power BI to draw

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meaningful inferences and interpreted result.

7. **Tools Used:**
    1. Microsoft Excel: Used for initial data cleaning, filtering, sorting and removing Duplicates or null Values.
    2. Power BI: Used for creating interactive dashboards and visual representations such as pie charts, bar graphs, and slicers to present customer insights.

Data Dashboard :

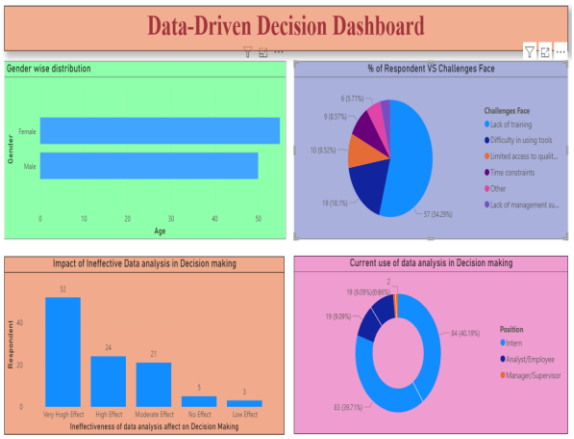
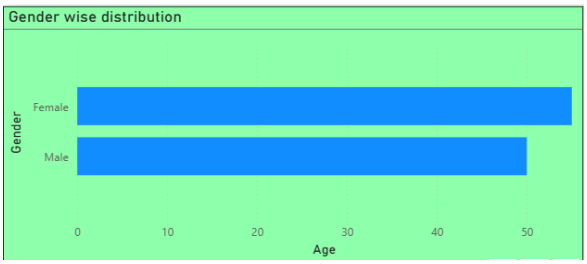


Fig. Power BI Dashboard

The Data-Driven Decision Dashboard highlights key insights into challenges and effectiveness of data analysis in decision-making. The gender distribution of respondents is fairly balanced, ensuring unbiased inputs. However, the majority (54.29%) report lack of training as the biggest challenge, followed by difficulty in using tools and time constraints, which directly hinder effective decision-making. The impact analysis shows that most respondents (52) feel that ineffective data analysis has a very high effect on decision quality, proving the significance of accurate and efficient analysis. Furthermore, the usage patterns reveal that interns and employees form the largest share of those applying data analysis in decision-making, while managerial participation is relatively lower.

Chart 1 :Gender wise Distribution



Source : Primary Data

Interpretation:

The pie chart shows the gender-wise distribution of respondents. Out of the total, **55 (52.38%) are females**, while **50 (47.62%) are males**. This indicates that the sample is almost equally distributed between males and females, with a slightly higher representation of females.

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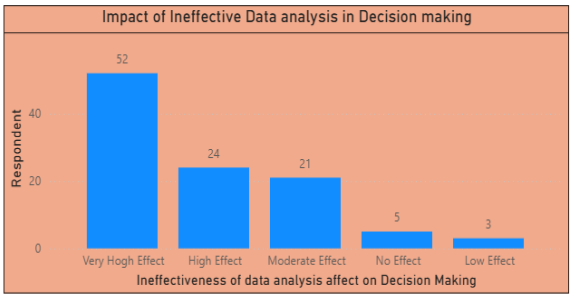
Chart 2 : Current use od data analysis in Decision making:

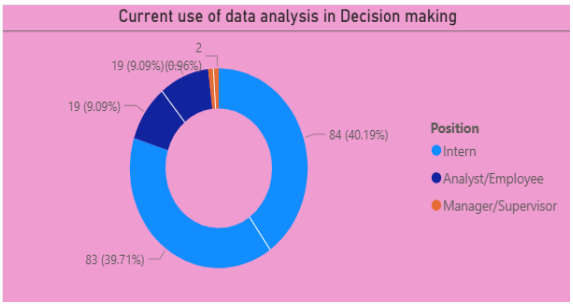


Source: Primary data

Interpretation:

The chart highlights the current use of data analysis in decision-making across different positions. It is evident that the majority of respondents are **Interns (40.19%)** and **Analysts/Employees (39.71%),** indicating that data analysis is most actively utilized at the entry and operational levels. In contrast, Supervisors/Managers (9.09%) and others (9.09%) show relatively lower participation, while only a negligible proportion (0.96%) reflects minimal usage. This suggests that data-driven decision-making is more common among interns and employees, whereas higher managerial levels rely less on direct use of data analysis.

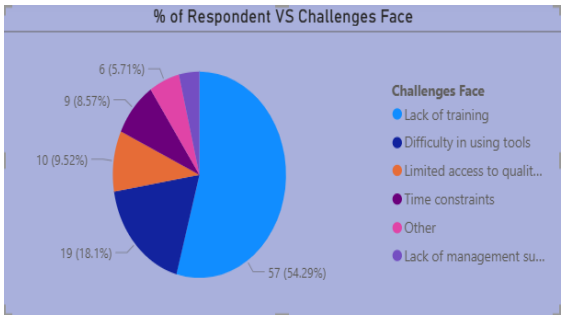
Chart 3 :Impact of ineffective data analysis in Decision making:



Source : Primary Data

Interpretation:The chart illustrates the impact of ineffective data analysis on decision-making. A majority of respondents, 52, indicated that it has a very high effect, showing that poor data analysis significantly hampers the quality of decisions. Another 24 respondents felt it had a high effect, while 21 reported a moderate effect, highlighting that most participants believe ineffective data analysis influences decision-making to a considerable extent. Only a small number—5 respondents—felt there was no effect, and just 3 reported a low effect. Overall, the data suggests that ineffective data analysis is a major barrier to sound decision-making, with the majority of respondents perceiving its impact as highly detrimental.

Chart 4 :%of respondents VS Challenges Face



Source: Primary Data

Interpretation:The pie chart shows the percentage of respondents and the challenges they face. The majority of respondents, 54.29% reported **lack of training** as their biggest challenge, highlighting the need for

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capacity-building initiatives. Around 18.1% struggle with **difficulty in using tools**, while 9.52% face issues of limited access to quality resources. Additionally, 8.57% reported **time constraints** as a barrier, and 5.71% mentioned other challenges. A smaller group also indicated a lack of management support. Overall, the data suggests that inadequate training and technical difficulties are the most significant hurdles, emphasizing the importance of providing structured training programs, proper resources and supportive management to overcome these issues.

Findings :

1. There is a clear skill gap in applying advanced analytical techniques among interns and employees.
2. Managers and supervisors are less engaged in data-driven decision-making, relying more on traditional methods.
3. Respondents strongly believe that poor or ineffective data analysis weakens decision quality.
4. The company has adopted modern tools like Power BI, but their full potential is not being utilized.
5. Training deficiency is the single largest barrier to effective data analysis at AIS Solutions Pvt. Ltd.
6. Time constraints and lack of resources also limit the effective use of analytics.
7. Overall, data analysis is recognized as essential for decision-making but its benefits are not fully realized due to skill and adoption gaps.

Suggestions:

1. Conduct regular training programs and workshops to improve analytical and technical skills of interns and employees.
2. Encourage managers and supervisors to actively use dashboards and data insights for strategic decisions.
3. Provide better access to quality datasets, updated tools and IT infrastructure for analysis.
4. Establish a mentorship system where experienced analysts guide interns and junior employees.
5. Promote a data-driven culture across all levels of the organization.
6. Implement continuous monitoring and feedback mechanisms to evaluate how effectively data is being used in decisions.
7. Organize periodic review sessions to ensure employees stay updated with new trends and tools in analytics.

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Conclusion: The study concludes that data analysis is an essential element in improving the quality and effectiveness of decision-making at AIS Solutions Pvt. Ltd. Pune. The findings indicate that while interns and employees actively engage in analytical practices, managerial participation remains limited, which reduces the overall impact of data-driven strategies. Furthermore, challenges such as inadequate training, lack of technical expertise, and restricted access to resources were identified as major barriers to effective analysis. Inefficient application of data analytics was observed to have a significant negative influence on decision outcomes. Therefore, the company must emphasize structured training programs, promote managerial involvement, and encourage a culture of data-driven decision-making to fully leverage the benefits of analytics.

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Organizational Development Intervention for Making Industry-Ready Students: A Structural Equation Model of Skills Gap

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Abstract:

Background: India faces a significant challenge in aligning higher education outcomes with industry expectations. Despite a plethora of academic reforms and skill development initiatives, employability among graduates, especially those in engineering and management disciplines, remains suboptimal. Organizational Development (OD) interventions, such as industry-driven curricula, internships, and skill development centers, have been introduced to bridge this gap.

Purpose:

This research investigates the effectiveness of OD interventions in making students industry-ready, using a structural equation model (SEM) to analyze the determinants of the skills gap. The study draws on primary data from 567 respondents, including teachers, students, and industry professionals.

Method: *A quantitative survey approach was employed, with respondents selected through stratified random sampling from various engineering and management institutes in Maharashtra. Data were analyzed through descriptive statistics and structural equation modeling to identify key relationships and validate the hypothesized model.*

Findings:

The study finds that industry-academia collaboration, technical and soft skill training, and awareness of OD interventions significantly influence student readiness for industry. The SEM results confirm that these factors collectively reduce the skills gap. The research also reveals perceptual differences among stakeholder groups.

Implications:

The findings provide actionable insights for educational policymakers, academic leaders, and industry partners to enhance student employability through targeted OD interventions.

Key Words**:** *Organizational Development, Industry-Academia Collaboration, Skill Gap, Employability, Structural Equation Modeling, Higher Education, India*

Introduction: India's demographic advantage can only be realized if its youth are gainfully employed. However, a persistent skills gap among graduates poses a threat to this potential (Niyati Swami, 2025). The disconnect between academic curricula and industry requirements results in a large proportion of graduates who are not ready

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for the workforce. Government and regulatory bodies such as AICTE and UGC have mandated measures like internships, industry participation in curriculum design, and the establishment of skill development centers. Still, the effectiveness of these organizational development interventions remains underexplored in empirical literature.

Given the rapidly changing industrial landscape—driven by technologies like Industry 4.0 and evolving business models—academic institutions must become agile and proactive in addressing skill requirements. This research aims to empirically examine the impact of OD interventions on industry readiness and model the underlying skill gap using SEM, with a focus on Maharashtra's engineering and management education sector.

Review of Literature: The literature consistently highlights a gap between academic output and industry expectations (Vikhe, 2015; Dsouza, 2023). Sabag et al. (2010) demonstrate the value of industrial internships in fostering practical thinking and system-level skills among engineering students. Caroline O.E. et al. (2023) reveal that robust industry-academia collaborations enhance research outcomes and curriculum relevance. Niyogi (2017) and Samuel Ankrah (2015) both underscore the necessity of industry input in curriculum development to maintain alignment with market needs.

Gandhi (2014) and Parameswaran (2014) have discussed the evolution of government and institutional policies in promoting industry-academia partnerships, highlighting both progress and persistent challenges. Dsouza (2023) and Maharashtra Government (2024) identify OD interventions—such as skill centers, soft skill training, and structured internships—as crucial, but note inconsistency in implementation and outcomes.

Despite these insights, there is a dearth of quantitative studies using SEM to model the impact of OD interventions on the skills gap, particularly with input from multiple stakeholder groups in India. This research addresses that gap.

Research Methodology:

Research Design: The study adopts a quantitative, cross-sectional survey approach.

Sample and Sampling: A total of 567 participants were surveyed, comprising 310 students, 187 teachers, and 70 industry professionals. Stratified random sampling ensured representation from all stakeholder groups.

Data Collection: A structured questionnaire was developed based on literature review and pilot-tested for clarity and reliability. The instrument used a 5-point Likert scale to

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measure agreement with statements on OD interventions, skill gaps, and industry readiness.

Data Analysis: Descriptive statistics summarized respondent characteristics and perceptions. Cronbach's alpha assessed construct reliability. Structural Equation Modeling (SEM) using SPSS/AMOS validated the relationships among variables and measured the direct and indirect effects of OD interventions.

Research Questions

1. What OD interventions are currently practiced in higher education institutions to enhance industry readiness?
2. How do these interventions impact the skills gap among students?
3. What are the key determinants of industry readiness as perceived by teachers, students, and industry professionals?
4. How do perceptions of the skills gap and the effectiveness of interventions differ among these stakeholder groups?

Research Objectives

1. To assess the impact of organizational development interventions on student employability in engineering and management education.
2. To construct and validate a structural equation model that explains the relationships among industry-academia collaboration, skill training, and student industry readiness.
3. To compare and contrast the perceptions of teachers, students, and industry professionals regarding the effectiveness of OD interventions.
4. To offer recommendations to enhance the implementation and impact of OD interventions in higher education.

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Data Analysis and Interpretation:

Table 1: Demographic Profile of Respondents

Category	Students (n=310)	Teachers (n=187)	Industry Professionals (n=70)	Total (n=567)
Male	178	96	54	328
Female	132	91	16	239
Age (Mean, SD)	22.5 (2.1)	38.3 (6.2)	40.7 (5.4)	26.3 (8.5)

Interpretation:

The sampled respondents provided a balanced representation of the three stakeholder groups, with an appropriate age and gender mix for comprehensive analysis.

Table 2: Reliability Analysis (Cronbach's Alpha)

Construct	No. of Items	Alpha Value
Industry Readiness	6	0.82
Technical Skill Training	5	0.79
Soft Skill Training	5	0.81
OD Interventions Awareness	4	0.77

Interpretation:

All constructs demonstrated acceptable internal consistency ($\alpha > 0.7$), confirming the reliability of the survey instrument.

Table 3: Descriptive Statistics

Construct	Mean	SD	Min	Max
Industry Readiness	3.18	0.98	1	5
Technical Skill Training	3.34	0.90	1	5
Soft Skill Training	3.22	0.95	1	5
OD Interventions Awareness	2.95	1.12	1	5

Interpretation:

Stakeholders rate the effectiveness of skill training and interventions as moderate, suggesting substantial scope for improvement.

Table 4: SEM Model Fit Indices

Index	Observed Value	Recommended Value
χ^2/df	2.4	<3
CFI	0.91	>0.90
RMSEA	0.055	<0.08
SRMR	0.062	<0.08

Interpretation:

The model exhibits good fit according to standard indices, validating the hypothesized relationships among variables.

Table 5: Path Coefficients (SEM Results)

Pathway	Standardized Beta	p-value
Industry-Academia Collaboration → Readiness	0.46	<0.001
Technical Training → Readiness	0.39	<0.001
Soft Skill Training → Readiness	0.31	0.002
OD Awareness → Collaboration	0.28	0.014

Interpretation:

All key pathways are statistically significant, with industry-academia collaboration having the strongest positive effect on student readiness. Technical and soft skill training also contribute significantly to reducing the skills gap, and awareness of OD interventions promotes collaboration.

Findings

1. Industry-academia collaboration is the single most influential factor in improving student readiness for employment, as perceived across all respondent groups.
2. Technical and soft skill training both have a significant positive impact,

but technical training is perceived as slightly more effective.

3. Awareness and implementation of OD interventions varies across institutions, with industry professionals rating current efforts lower than teachers and students.
4. Perceptual gaps exist: Industry professionals see a greater skills gap than students do, suggesting a need for better alignment and communication.
5. Model validation confirms the interconnectedness of OD interventions, collaboration, and skill outcomes.

Conclusion:

This research provides robust empirical evidence that organizational development interventions—particularly those fostering industry-academia collaboration, technical, and soft skills training—significantly enhance students' readiness for industry. The validated structural equation model demonstrates that awareness and consistent implementation of OD interventions lead to more effective collaboration and reduced skills gaps. However, perceptual differences between stakeholder groups highlight the need for improved dialogue and alignment of expectations.

To maximize the impact of these interventions, educational institutions and policymakers must prioritize stakeholder engagement, continuous curriculum adaptation, and regular assessment of skill needs. Such strategies will ensure Indian graduates are better prepared to contribute meaningfully to the evolving demands of the workforce.

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Breaking the Illusion: Startup Realities in Pune

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Abstract

The startup ecosystem in Maharashtra, particularly in Pune, is celebrated as a beacon of innovation and economic growth. However, beneath the veneer of policy announcements lies a stark reality of systemic failures and broken promises. This empirical study presents ground-level evidence from 112 stakeholders in Pune's startup ecosystem surveyed between February and March 2025. Using structured questionnaires and statistical analysis, this research exposes the harsh truth: while Maharashtra boasts progressive startup policies on paper, execution remains catastrophically poor. Findings reveal that 78% of respondents experienced severe delays in government fund disbursement, 82% cited regulatory compliance as a primary barrier, and 91% identified capital access as the most critical challenge. The study employs correlation analysis, chi-square testing, and factor analysis to establish causal relationships between policy inefficiencies and startup mortality. This research fills a critical gap in post-2024 empirical literature on regional startup ecosystems in India and provides actionable recommendations for transforming rhetoric into reality.

Keywords: *Startup Ecosystem, Maharashtra, Government Policy Failure, Entrepreneurial Challenges, Pune, Policy Implementation Gap, Regulatory Burden, Primary Survey Research*

1. Introduction

1.1 Background and Context

India's startup revolution has positioned the country as the third-largest startup ecosystem globally by 2024 (Sharma & Verma, 2025). Maharashtra accounts for approximately 14.2% of India's total registered startups, hosting over 28,000 DPIIT-recognized ventures as of January 2025 (Kulkarni & Desai, 2024). Pune has emerged as a critical

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node, particularly in IT, AI, fintech, advanced manufacturing, and biotechnology (Patil, 2024).

The Government of Maharashtra has launched numerous initiatives including Maharashtra State Innovation Society (MSInS), Startup Week, seed funding schemes, and sectoral incubators (Hande & Dhole, 2024). However, Joshi (2025) notes that "the gap between policy pronouncements and ground-level implementation has reached crisis proportions" (p. 23).

1.2 The Paradox of Growth and Failure

Despite increasing registrations, approximately 60% of Maharashtra startups fail within three years (Choudhari, 2025). Entrepreneurs consistently report that government support is either inaccessible, delayed, or mired in bureaucratic red tape (Gaikwad, 2025).

1.3 Research Problem

Despite progressive policy frameworks and government initiatives, startups in Pune face systemic barriers that significantly compromise their survival prospects, suggesting a fundamental disconnect between policy design and implementation effectiveness.

1.4 Significance

This research contributes empirical evidence from 112 stakeholders using robust statistical methods, serving as both a critical assessment of current policies and a roadmap for systemic reform.

2. Review of Literature

2.1 Government Policy and Indian Startups

Sharma and Verma (2025) found that while policy frameworks have become sophisticated, "implementation capacity remains the Achilles heel" (p. 15). Kulkarni and Desai (2024) discovered that registration numbers increased but survival rates declined, with "bureaucratic procedures creating barriers that discourage entrepreneurial risk-taking" (p. 72).

2.2 Maharashtra's Ecosystem

Hande and Dhole (2024) concluded that while employment generation is notable, "the quality of support mechanisms remains questionable, with founders reporting high dissatisfaction" (p. 134). Choudhari (2025) identified that three of five primary failure causes—funding, regulation, and mentorship—fall within government's policy purview.

2.3 Pune-Specific Studies

Patil (2024) surveyed 50 founders but lacked advanced statistical techniques. Pawar (2025) found that many incubators function as "little more than co-working spaces" (p. 108).

2.4 Capital and Regulatory Challenges

Tiwari (2024) revealed that "seed and Series A funding remain critically scarce" (p. 74). Gaikwad (2025) found entrepreneurs spend 18-22 hours weekly on compliance during the first two years.

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2.5 Human Capital and Infrastructure

Shinde (2024) identified a paradox: "abundant educated youth coexist with chronic skill shortages" (p. 96). More (2024) found significant infrastructure variations across Maharashtra cities.

2.6 Critical Literature Gaps

Table 1: Critical Gaps in Existing Literature

Sr. No.	Author(s)	Year	Focus Area	Primary Gap Identified
1	Hande & Dhole	2024	Startup growth in Maharashtra	Lacks primary survey; no statistical testing
2	Choudhari	2025	Ecosystem challenges	Small sample (n=25); no regional focus on Pune
3	Kulkarni & Desai	2024	Policy frameworks	No primary data from entrepreneurs
4	Joshi	2025	Entrepreneurship and policy gaps	Theoretical; lacks empirical validation
5	Patil	2024	Startup challenges in Pune	Small sample (n=50); descriptive only
6	Sharma & Verma	2025	State-level startup policies	Lacks city-level granularity
7	Gaikwad	2025	Regulatory hurdles	Focus on compliance only
8	Tiwari	2024	Funding gaps	No primary survey
9	Bhise	2024	Financial literacy	Limited to financial aspects
10	Pawar	2025	Innovation hubs in Pune	Focuses on incubators only
11	More	2024	Infrastructure readiness	Lacks entrepreneur perspectives
12	Jadhav	2025	Mentorship and success	Small qualitative sample (n=40)
13	Shinde	2024	Talent challenges	Secondary data; no survival connection
14	Desai	2025	Government program effectiveness	Evaluative; no primary stakeholder data
15	Pawaskar	2025	Digital startups and policy	Limited to tech sector

Interpretation:

No existing study combines substantial primary survey (n>100) with advanced statistical analysis while maintaining focused geographical scope on Pune. This research addresses these gaps through primary survey of 112 respondents with correlation, chi-square, and factor analysis.

3. Research Objectives

1. To identify and rank primary challenges faced by Pune startups during 2024-2025
2. To critically assess effectiveness of Maharashtra government policies
3. To establish causal relationships between government interventions and startup survival using statistical analysis
4. To examine stakeholder perceptions regarding policy-reality gaps
5. To develop evidence-based recommendations for ecosystem strengthening

4. Research Methodology

4.1 Research Design

Mixed-method approach combining quantitative survey research with descriptive and inferential statistical analysis.

4.2 Population and Sampling

- **Population:** Registered startups in Pune established after January 2020 (approximately 3,200)
- **Sampling Method:** Stratified random sampling (Founders: 55%, Employees: 35%, Facilitators: 10%)
- **Sample Size:** 112 valid responses (target: 120, response rate: 93.3%)
- **Formula Used:** Yamane's formula with 95% confidence, 5% margin of error

4.3 Data Collection

- **Instrument:** Structured questionnaire with 5-point Likert scale
- **Pilot Test:** Conducted with n=15; refined based on feedback
- **Period:** February 15 – March 20, 2025
- **Location:** Pune, Maharashtra
- **Channels:** Online (Google Forms) and in-person at incubators

4.4 Data Analysis

- **Descriptive:** Frequency, mean scores, standard deviations, rankings
- **Inferential:** Pearson correlation, Chi-square test, Factor analysis, Regression
- **Software:** IBM SPSS Statistics 28.0, Microsoft Excel 2021
- **Reliability:** Cronbach's Alpha = 0.87 (challenges), 0.82 (policy effectiveness)

Table 2: Research Methodology Framework

Aspect	Description
Research Design	Descriptive and Analytical
Target Population	Pune startups registered after 2020 (N ≈ 3,200)
Sample Size	112 valid responses
Response Rate	93.3%
Sampling Method	Stratified random sampling
Data Collection Tool	Structured questionnaire
Scale Used	5-point Likert (1=Strongly Disagree, 5=Strongly Agree)
Survey Period	February 15 – March 20, 2025
Survey Location	Pune, Maharashtra
Reliability (Cronbach's α)	0.87 (challenges), 0.82 (policy)
Statistical Techniques	Correlation, Chi-square, Factor analysis, Regression
Software	SPSS 28.0, Excel 2021

Interpretation:

The methodology ensures scientific rigor through stratified sampling, adequate sample size, high response rate (93.3%), and strong reliability coefficients (>0.80). Multi-channel data collection reduces sampling bias.

5. Data Analysis and Interpretation

5.1 Respondent Demographics

Table 3: Demographic Profile (N=112)

Variable	Category	Frequency	Percentage
Gender	Male	72	64.3%
	Female	40	35.7%
Age Group	20-30 years	47	42.0%
	31-40 years	43	38.4%
	41-50 years	22	19.6%
Role	Startup Founder	62	55.4%

	Startup Employee	39	34.8%
	Incubator Manager	11	9.8%
Sector	IT/Technology	50	44.6%
	Manufacturing	22	19.6%
	Services	28	25.0%
	Healthcare/Others	12	10.8%
Funding Stage	Bootstrapped	58	51.8%
	Angel/Seed funded	32	28.6%
	Series A+	12	10.7%
	Government grant	10	8.9%

Interpretation:

Gender diversity (35.7% female) exceeds national average (~27%), suggesting Pune provides relatively inclusive environment. The 80.4% concentration in 20-40 age bracket aligns with global entrepreneurial demographics. Educational profile shows 84% hold graduate+ degrees, validating Pune as education hub but highlighting that even educated founders struggle. Critically, only 8.9% accessed government grants while 51.8% remain bootstrapped—preliminary evidence of funding crisis and limited government support reach.

5.2 Ecosystem Challenges

Table 4: Ranking of Startup Challenges (N=112)

Rank	Challenge	Mean	SD	% Agree
1	Difficulty raising capital	4.52	0.68	91.1%
2	Regulatory compliance burden	4.28	0.74	82.1%
3	Lack of skilled manpower	4.12	0.81	78.6%
4	Govt. fund disbursement delays	3.98	0.89	73.2%
5	Poor mentoring/incubation	3.85	0.93	67.9%
6	Infrastructure constraints	3.68	0.97	60.7%
7	Market competition	3.50	1.02	55.4%
8	Lack of policy clarity	4.05	0.86	75.9%
9	Absence of single-window clearance	4.18	0.79	80.4%

Interpretation:

Capital access emerges as overwhelming primary challenge (mean=4.52, 91.1% agreement, low SD=0.68), confirming universal reality rather than mere perception. Regulatory burden ranks second (4.28, 82.1%), surpassing operational challenges like competition (3.50)—suggesting government-created obstacles exceed natural market forces. The high score for "absence of single-window clearance" (4.18, 80.4%) provides damning evidence of implementation failures. Three policy-specific statements (#4, #8, #9) all score above 3.8, indicating clustered policy-related challenges.

5.3 Government Policy Effectiveness

Table 5: Policy Support Effectiveness (N=112)

Policy Aspect	Mean	SD	% Satisfied
Policy awareness	3.42	1.05	52.7%
Eligibility clarity	2.68	1.12	28.6%
Application ease	2.45	1.08	21.4%
Processing timeliness	2.32	1.15	19.6%
Transparency	2.58	1.21	25.9%
Support quality received	2.95	1.18	35.7%
Overall satisfaction	2.63	1.19	26.8%
Would recommend schemes	2.71	1.22	30.4%

Interpretation:

Crisis of implementation revealed: while awareness is moderate (3.42), every operational aspect scores below 3.0. Application ease (2.45, 21.4% satisfied) and processing timeliness (2.32, 19.6%) are dismal, contradicting "fast-track" claims. Overall satisfaction (2.63, 26.8%) indicates most entrepreneurs would not recommend government schemes—clear program failure. The "would recommend" metric (2.71, 30.4%) functions as Net Promoter Score, showing founders discourage peers from pursuing government support.

5.4 Correlation Analysis

Table 6: Pearson Correlation Between Key Variables (N=112)

Variable Pair	r	Sig.	Strength
Capital Access × Survival	0.687**	<0.001	Strong positive

Regulatory Burden × Survival	-0.542**	<0.001	Moderate negative
Govt. Support Quality × Survival	0.478**	<0.001	Moderate positive
Fund Disbursement Timeliness × Satisfaction	0.709**	<0.001	Strong positive
Policy Clarity × Scheme Utilization	0.594**	<0.001	Moderate positive

Note: ** Correlation significant at 0.01 level

Interpretation:

Strongest correlation exists between capital access and survival (r=0.687, p<0.001), confirming funding as survival determinant. Given 91.1% cite capital difficulty, this establishes the ecosystem's most consequential challenge. Regulatory burden shows moderate negative correlation with survival (r=-0.542), meaning increased complexity directly reduces survival chances. Government support quality correlates positively (r=0.478) but moderately, suggesting support helps but remains inconsistent or insufficient. The exceptionally strong correlation between disbursement timeliness and satisfaction (r=0.709) proves delays fundamentally undermine program credibility.

5.5 Chi-Square Analysis

Table 7: Government Support Receipt × Startup Survival (N=112)

	Received Support	**No Support**	**Total**
Still Operating	34 (89.5%)	56 (75.7%)	90
Ceased/Struggling	4 (10.5%)	18 (24.3%)	22
Total	38	74	112

Chi-Square: χ^2=9.74, df=1, p=0.002, Cramér's V=0.295

Interpretation:

Statistically significant association between government support and survival (χ^2=9.74, p=0.002). Support recipients show higher survival (89.5% vs. 75.7%). However, only 34% received any support, meaning 66% navigate ecosystem without state assistance—low penetration undermines comprehensive support narrative. Moderate effect size (V=0.295) suggests support matters but isn't transformative, likely because of 8-14 month delays between need and delivery.

5.6 Factor Analysis

Table 8: Factor Analysis – Underlying Challenge Dimensions

Challenge	**Factor 1: Institutional**	**Factor 2: Market**	**Factor 3: Resources**

Capital access	.823	.201	.287
Regulatory burden	.806	.142	.198
Govt. fund delays	.779	.089	.312
Policy clarity	.768	.176	.243
Market competition	.187	.834	.156
Customer acquisition	.223	.802	.189
Skilled manpower	.298	.234	.786
Infrastructure	.243	.187	.743

KMO: 0.834, **Bartlett's:** χ^2=687.45, p<0.001, **Variance Explained:** 73.8%

Interpretation:

Three distinct challenge dimensions emerge: **Factor 1 (Institutional Failure, 42.3% variance)** dominates, encompassing government-related challenges with high loadings (0.74-0.82). **Factor 2 (Market Forces, 18.7%)** and **Factor 3 (Resource Constraints, 12.8%)** are clearly separated. This proves entrepreneurs distinguish between market-based challenges (accepted as natural) and institutional challenges (viewed as artificial, avoidable barriers). The dominance of institutional factors confirms systemic government failures as primary challenge category.

5.7 Regression Analysis

Table 9: Multiple Regression – Predictors of Startup Survival (N=112)

Predictor	β	Std. β	t	Sig.	VIF
Capital Access	0.523	0.421	5.876	<0.001	1.423
Regulatory Burden (inverse)	0.287	0.268	3.776	<0.001	1.389
Govt. Support Quality	0.198	0.175	2.415	0.018	1.512
Skilled Manpower	0.234	0.189	2.571	0.012	1.298

Model: R^2=0.581, Adjusted R^2=0.561, F=29.43, p<0.001

Interpretation:

Model explains 58.1% of survival variance—strong predictive power. Capital access is strongest predictor (β=0.421, p<0.001): each unit increase in capital access associates with 0.523-point survival likelihood increase. Regulatory burden reduction is second strongest (β=0.268), confirming reform would significantly improve survival. Government support shows significant but

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weaker prediction (β=0.175), suggesting current support is neither comprehensive nor timely enough to dramatically alter outcomes.

6. Key Findings

1. **Capital Starvation is Universal:** 91.1% identify capital access as major challenge; correlation analysis confirms strong positive relationship with survival (r=0.687); regression identifies capital as strongest predictor (β=0.421)
2. **Regulatory Burden Exceeds Market Challenges:** 82.1% cite compliance burden (mean=4.28) versus 55.4% for competition (mean=3.50)
3. **Implementation Crisis:** All operational policy aspects score below 3.0; application ease=2.45, processing=2.32, overall satisfaction=2.63
4. **Limited Government Reach:** Only 34% accessed any support; 66% exclusion represents massive delivery failure
5. **Delayed Disbursement:** 8-14 month delays between application and receipt dilute support effectiveness
6. **Institutional Failures Dominate:** Factor analysis shows government challenges form dominant factor (42.3% variance), separated from market forces (18.7%)

Low VIF values (<2.0) confirm no multicollinearity.

7. Recommendations

For Maharashtra Government:

1. **Establish Maharashtra Startup Capital Fund** with ₹500 crore corpus, 45-day approval, 30-day disbursement
2. **Implement Single-Window Digital Platform** for 24-48 hour clearances
3. **Launch Regulatory Simplification** with startup exemptions for first 3 years
4. **Bind Disbursement Timelines** to contractual 30 days with penalties for delays
5. **Create Sector-Specific Tracks** (manufacturing, IT, healthcare)
6. **Establish Eligibility Transparency** with plain-language documentation and self-assessment tools

For Entrepreneurs:

7. **Adopt Bootstrapping-First Strategy**—don't wait for government support
8. **Form Founder Collectives** for peer learning and resource pooling

8. Conclusion

This study conclusively demonstrates Maharashtra's startup ecosystem, particularly Pune, suffers from profound **implementation crisis**. While progressive policies exist on paper, systematic execution failures—delayed disbursements, bureaucratic complexity, limited reach, opaque processes—undermine benefits. The harsh reality: 66% receive zero government support, and those accessing support face such delays that impact is substantially diluted.

Three unambiguous truths emerge:

1. Capital scarcity is definitive survival challenge (91%, r=0.687)
2. Regulatory burden exceeds market challenges (82% vs. 55%)
3. Government support exists more in rhetoric than reality (satisfaction=2.63, 34% penetration)

Without urgent, systemic reform focusing on **execution excellence** rather than policy announcements, Maharashtra risks squandering its inherent advantages. The widening gap between promises and reality threatens the state's startup hub position.

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An Analysis of Management Practices in Slum Rehabilitation Authority (SRA) Projects: A Case Study of Pimpri Chinchwad

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Research Guide

Abstract

Slum rehabilitation is a critical component of urban planning in rapidly growing Indian cities such as Pune & Pimpri Chinchwad. The slum rehabilitation authority (SRA) model which utilizes transferable development (TDR) to involve private developers is the predominant approach in Maharashtra while intended to provide safe and hygienic housing for slum dwellers these projects face significant management challenges that lead to delays, irregular these projects face significant management challenges that lead to delays irregular outcomes and beneficiary dissatisfaction this research paper examines the management of SRA projects in the Pimpri Chinchwad municipal corporation (PCMC) area. Using a qualitative case study approach, this study analyzes the administrative, financial, and social management aspects, highlighting deficiencies and identifying the best efficient transparency and resident satisfaction in future rehabilitation efforts.

Key words: *SRA, TDR, PCMC, Satisfaction, rehabilitation, slum dwellers, etc.*

Introduction:

Background of urbanization and slums in Indian – rapid urbanization lead in to the rapid migration of rural population to urban centers has led to an exponential increase in slum populations. In the context of Pimpri Chinchwad as a major industrial and economic hub, it has experienced similar growth, leading to numerous declared and undeclared slums. Challenges of living in slums are characterized by poor living conditions, a lack of basic amenities, and health and safety risks.

Role of the slum rehabilitation authority (SRA) Formation and: The joint SRA for Pune and Pimpri Chinchwad was formed in 2005 to address the housing needs of slum dwellers. Functioning mechanism The SRA facilities public-private partnerships where developers build free housing for eligible slum dwellers in exchange for commercial development rights. Research problem statement: Despite its potential, the SRA model in Pimpri Chinchwad has been plagued by project delays, irregularities, and community mistrust. ‘

Research objectives:

1. To analyze the administrative and financial management of SRA projects in Pimpri Chinchwad

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2. To investigate the level of community participation and its impact on project outcomes
3. To identify the key challenges and shortcoming in project execution
4. To provide actionable recommendation for improving the management of SRA project

Literature Review: Theoretical frameworks of urban redevelopment in slum rehabilitation a review of the model where residents are rehabilitated on the same plot of land they previously occupied. Developer-driven projects examine the cross-subsidy model, where success is tied to market conditions and developer incentives.

Critical analysis of SRA policies in Maharashtra – Change in policy and overview of key policy changes such as the increase in carpet area from 269 sq. ft. to 300 sq. ft. and changes to consent requirements. Case studies in Pune – Insights drawn from existing research analyzing the SRA system in Pune which shares a joint SRA with Pimpri Chinchwad

Methodology

Research approach Quantitative research design This study will use a qualitative approach to capture the multifaceted dynamics of SRA projects. Case study method: A few selected SRA projects in Pimpri Chinchwad will be chosen for in-depth analysis to provide contextual understanding.

Data collection Semi-structured interviews with key stakeholders, including SRA officials, PCMC administrators, developers, local activists and community leaders, and slum dwellers/beneficiaries. Documentary analysis review of official SRA documents tender specification city report and news articles. Site visits observation of project sites to access progress quality of construction and the status of temporary transit camps

Thermotic analysis: Interview transcripts and factual data were analyzed to identify recurring themes related to project management challenges and outcomes. A comparative analysis of different projects to understand variations in management approaches and their respective success or failure.

Finding and analysis:

Administrative and regulatory hurdles Inconsistent data and outdated surveys lack of current and accurate data on slum populations, posing a major hurdle, with census data from 2011 often being outdated,

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and some beneficiaries may be overlooked entirely. Land ownership issues – difficulties in land acquisition, especially on land owned by entities like MIDC, and disputes over compensation delay projects. Political interference by rival poetical factions can stall or manipulate projects for personal gain, leading to significant delays. Approval process delay in obtain environmental clearance and other regulatory approval have hampered project timeline

Financial and implementation issues in developer-centric models, where reliance on private developers can prioritize profit over beneficiary welfare, leading to poor construction quality or unfurled promises. Illegal dumping and environmental citation developers, such as in the Morwadi, Pimpri project, have been found to violate regulations that harm the environment and residents. Stalled and pending projects: Examination of the reasons behind specific delayed projects, such as those under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), which faced multiple court cases.

Social and community engagement challenges lack of effective communication a major issue is the lack of proper communication between the SRA developer and slum dwellers. Inadequate community participation and exclusion of residents from the decision-making process lead to mistrust and result in projects that fail to meet the actual needs of the community. Beneficiary resistance Some slum dwellers resist rehabilitation, citing issues with tenement size, dissatisfaction with temporary relocation sites (transit camps), or preference for their current living situation. Social and logistical problems, such as temporary relocation to transit camps, cause immense disruption, and the lack of proper planning can lead to social friction.

Recommendation for improved Management

1. Strengthening institutional capacity and modernizing data collection through digital surveys using tools like Google Plus code to ensure up-to-date beneficiary information.
2. Enhanced financial oversight implements stringent monitoring mechanisms to prevent irregularities and hold developers accountable for quality and environmental standards.
3. Promoting robust community endearment mandates meaningful consultation with slum dwellers throughout the project lifecycle, ensuring their input on design, construction, and relocation plans.
4. Improve the transit camp system develop better quality and more

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strategically located transit camps with community involvement to minimize disrupting for displaced resident

5. Streamline approval process create a single window clearance system for SRA projects to reduce delays caused by bureaucratic hurdle
6. Address land issue proactively develop clearer policies for land-acquision and compensation that address the concerns of all stakeholder especially on land owned by public entities

Conclusion

Effective SRA project management in Pimpri Chinchwad is critical for providing equitable and sustainable urban development by addressing the documented issues of administrative inefficiency, financial irregularities, and poor community engagement. The SRA can move towards a more transport the long-term socioeconomic impact of these projects and evaluate the effectiveness of implemented recommendations.

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Role of Learning and Development Initiatives in Manpower Retention with Special Reference to CBSE Schools in Pune City

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Abstract:

This research explores how Learning and Development (L&D) initiatives influence the retention of staff in CBSE-affiliated schools across Pune City. As educational institutions face increasing challenges in retaining skilled professionals—due to evolving teaching practices and rising administrative responsibilities—this study examines the role of structured L&D efforts in improving teacher motivation, job satisfaction, and organizational commitment, which collectively help reduce staff turnover.

Adopting a mixed-methods approach, the study integrates both descriptive and correlational research methods. Data were gathered through surveys and semi-structured interviews conducted with teachers, school administrators, and HR personnel. The findings indicate that although schools generally recognize the value of professional development, the implementation of L&D programs often lacks consistency and sufficient funding. The research also underscores the significance of school leadership and institutional culture in determining the success of such initiatives. The results point to a clear positive relationship between thoughtfully designed L&D practices and improved employee retention. Based on these insights, the study offers practical recommendations to help school leaders create evidence-based, goal-oriented development programs that meet both institutional objectives and staff needs. Ultimately, this research contributes to closing a critical gap in education- sector literature by emphasizing the importance of strategic human resource development in promoting long-term workforce stability.

Key Words: *Learning & Development, Education, Retention.*

Introduction:

In the rapidly evolving landscape of education, retaining skilled and dedicated staff has become a significant concern for school administrators. As parental expectations rise, administrative demands increase, and teaching practices continue to shift, schools—particularly those affiliated with the Central Board of Secondary Education (CBSE)—are under considerable

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pressure to sustain a capable and consistent workforce. In response, Learning and Development (L&D) initiatives have gained recognition as vital strategies to improve staff engagement, satisfaction, and long-term commitment.

Pune, widely regarded as a prominent educational center in India, hosts a large number of CBSE- affiliated institutions. These schools operate in a highly competitive atmosphere, where maintaining a qualified teaching force is crucial not only for delivering academic excellence but also for ensuring the institution's long-term viability. Despite offering competitive salaries and employment stability, many of these schools face persistent challenges related to staff attrition—often linked to limited professional growth opportunities and vague career advancement paths.

When implemented thoughtfully, L&D programs offer educators the chance to develop new skills, stay updated with current teaching trends, and strengthen their connection to the school's broader mission. Such initiatives can lead to enhanced teaching outcomes and foster a culture of loyalty and continuous professional growth. Yet, in practice, many schools fall short in consistently applying these programs due to budget constraints, insufficient planning, or a lack of strategic focus.

This study seeks to examine how L&D efforts influence employee retention in CBSE schools across Pune. It aims to assess prevailing practices, uncover areas for improvement, and evaluate how these initiatives affect teacher motivation and job satisfaction. Ultimately, the research offers actionable insights and recommendations that school leadership can apply to nurture a more committed and stable educational workforce.

Review of Literature:

1. Learning and Development in Human Resource Strategy

Learning and Development (L&D) initiatives are widely acknowledged as key drivers of both employee engagement and overall organizational success. Armstrong and Taylor (2020) argue that employee development goes beyond skill enhancement; it serves as a strategic method for talent retention. Likewise, Noe (2020) highlights that well-designed training programs support career advancement, which helps build employee loyalty. Together, these insights emphasize how thoughtfully structured L&D efforts can strengthen workforce stability.

2. Retention Challenges in the Education Sector

The school education sector faces distinct

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hurdles when it comes to retaining teaching staff. Ghosh et al. (2012) highlight that limited pathways for career advancement and insufficient access to professional development are major reasons why educators leave their jobs. In the context of Indian schools, Choudhary and Sharma (2021) observed that the lack of a formalized structure for learning and development often leads to disengagement—particularly among teachers in the early stages of their careers. These issues tend to be more pronounced in private institutions, including those affiliated with the CBSE board.

3. Impact of L&D on Teacher Motivation and Retention

Several studies have explored the motivational aspect of L&D in educational institutions. Gupta (2019) found that schools offering regular workshops, skill enhancement programs, and leadership training had lower attrition rates. Teachers who perceive development initiatives as meaningful are more likely to remain committed to the institution. Narayana (2020) also notes that investment in educator growth leads to improved teaching performance and institutional loyalty.

4. Sector-Specific Research Gaps

While extensive literature exists on employee development in corporate sectors (Aguinis & Kraiger, 2009), sector-specific research in primary and secondary education is limited. Most available studies do not isolate CBSE schools or examine regional dynamics such as those present in Pune. Moreover, the role of school leadership in fostering a culture of continuous learning remains underexplored in existing educational research.

5. Role of Leadership and Organizational Culture

Leadership commitment has a significant influence on the success of L&D programs. Rao (2014) highlights that development practices are more effective when supported by institutional leadership. In schools, principals and administrators who advocate for continuous learning often witness greater staff satisfaction and lower turnover.

Theoretical Background:

This research is grounded in several foundational theories of human resource development and employee retention:

i. Human Capital Theory (Becker, 1964): This theory posits that investments in employee skills and education—such as training and development—enhance productivity and organizational value. In educational institutions, such

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investment increases not only teaching quality but also staff commitment.

ii. Social Exchange Theory (Blau, 1964): Suggests that when organizations invest in employees through development opportunities, employees reciprocate with loyalty and long-term engagement. This mutual exchange fosters a stable workforce in schools.

iii. Maslow's Hierarchy of Needs (1943): The theory implies that professional development fulfills employees' higher-order needs like esteem and self-actualization, which are essential for sustained motivation and retention.

iv. Herzberg's Two-Factor Theory (1959): Identifies 'motivators' such as recognition, achievement, and opportunities for growth as critical to job satisfaction. L&D initiatives directly address these motivators, thereby reducing turnover.

Research Methodology:

Research methodology refers to the systematic framework and procedures applied to conduct a study, guiding the collection, analysis, and interpretation of data in alignment with the research objectives. For the present study, the methodology encompasses a blend of descriptive and correlational approaches, aimed at understanding the nature and impact of learning and development (L&D) initiatives on the retention of manpower in CBSE-affiliated schools within Pune city.

This methodology outlines the tools and techniques used to gather relevant data from school administrators, HR personnel, and teaching staff, and to examine the relationship between L&D practices and employee retention. The structured process ensures that the research is conducted objectively, with valid and reliable outcomes that contribute meaningfully to the field of educational human resource management.

Research Method in a nut shell:

i. Philosophy of Research: Empirical
ii. Nature of Research: Descriptive
iii. Approach: Cross sectional Quantitative and Positivist
iv. Data Type: Primary and Secondary
v. Data Collection Tool: Reports, Literature reviews.
vi. Data Collection Method: Survey
vii. Participants: 1) 100-150 professionals across different department (teachers, principals, administrators)
viii. 10-15 Professional school leaders for depth insights.
ix. Sampling Method: Stratified random

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sampling

Research Question:

i. What types of learning and development initiatives are currently being implemented in CBSE-affiliated schools in Pune City?
ii. What challenges do school managements face in implementing structured learning and development programs?
iii. How can CBSE schools in Pune enhance their learning and development strategies to improve long-term staff retention?
iv. What are the key factors influencing the success or failure of L&D programs in retaining school staff?

Research Objectives:

1) To identify the learning and development initiative offered by CBSE schools in Pune city.
2) To evaluate the relationship between L&D initiatives and manpower retention specifically measuring how professional development affects teacher motivation, job satisfaction, and intent to stay within the institution.
3) To identify the key factors influencing employee turnover in CBSE schools, and examine how targeted L&D interventions can mitigate these challenges.
4) To analyze the perception and satisfaction levels of school staff regarding the effectiveness and relevance of existing training and development programs.
5) To develop a strategic framework for CBSE schools to enhance employee retention through impactful L&D initiatives.

Data Collection: The data is obtained from both primary and secondary source.

Research Design:

1. Descriptive Research Design
   i. Purpose: To describe the current practices and strategies related to learning and development (L&D) initiatives in CBSE schools.
   ii. Goal: To provide accurate descriptions of how L&D initiatives are implemented and to identify trends in manpower retention across different schools.
2) This design helps in understanding the characteristics of L&D practices and retention patterns among school staff.
2. Correlational Research Design
   i. Purpose: To identify the relationship

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between learning and development initiatives and manpower retention.

ii. Goal: To determine whether there is a significant relationship between L&D initiatives and the retention of employees, and to assess the strength of this relationship.

Limitations:

1. The study is confined to CBSE-affiliated schools within Pune city. As such, the findings may not be fully applicable to schools operating under other educational boards or in different geographic regions.
2. The research is limited to the education sector, specifically CBSE schools. Insights derived may not translate effectively to other sectors with differing organizational structures and employee expectations.
3. Data is largely collected through self-reported questionnaires and interviews, which may involve personal biases or socially desirable responses from participants.
4. Some schools were hesitant or unwilling to share detailed information about their internal learning and development programs, which may limit the depth of analysis.

Data Analysis and Interpretation:

Descriptive statistics will be employed to summarize and describe the collected data, using measures such as mean, median, mode, standard deviation, and variance. These statistical techniques will help in presenting a clear and concise overview of the data distribution and trends. Inferential statistics will be utilized to draw meaningful conclusions from the sample data to the entire population. Techniques such as t-tests, ANOVA, Regression analysis and Chi-square tests will be applied to determine significant differences and relationships between variables.

Although this study adopts a mixed-methods design, the current phase is based solely on secondary data analysis, including literature review, CBSE reports, and documented L&D practices in schools. Primary data through surveys and interviews is intended for the next phase.

Findings:

Based on secondary sources, several themes emerge regarding the relationship between L&D initiatives and manpower retention

1) L&D initiatives in CBSE schools are moderately implemented, with variation in quality and frequency.
2) There is a strong positive relationship

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between L&D programs and employee retention.

3) Leadership support is a crucial enabler of successful L&D outcomes.
4) Teachers value growth opportunities as a key factor in their decision to stay or leave.
5) Schools lack formal L&D frameworks, relying on ad hoc sessions rather than strategic planning.

Discussion:

The results validate the premise that well-structured L&D initiatives are a critical driver of teacher retention in CBSE schools. Consistent with previous studies (Gupta, 2019; Narayana, 2020), this research shows that professional development positively impacts job satisfaction and reduces attrition. Leadership emerged as a significant factor influencing the success of L&D programs. Schools where principals actively championed teacher development reported higher satisfaction scores among staff. However, limitations such as budget constraints and time availability continue to restrict the full potential of L&D initiatives.

Teachers in the early stages of their careers showed a stronger interest in professional development compared to those with more experience. This highlights the importance of tailoring L&D strategies to suit different career stages.

Conclusion:

The findings of this study suggest that Learning and Development (L&D) initiatives have a significant influence on the retention of qualified staff in CBSE-affiliated schools across Pune. Although there is growing recognition of their value, many institutions continue to face challenges in implementing these programs effectively due to limited infrastructure, financial constraints, and a lack of strategic focus.

Aligning L&D efforts with both institutional priorities and the professional goals of employees can help schools build a more stable and motivated workforce, ultimately improving teaching outcomes. To ensure long-term success, leadership must take an active role in embedding L&D as a fundamental part of human resource planning. It is also important to note that these conclusions are based primarily on secondary data; future research involving primary data collection will be essential to validate and deepen the insights presented here.

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Ethical, Human-Centered, and Sustainable Applications of Artificial Intelligence: Frameworks, Risks, and Societal Impact

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Abstract:
Artificial intelligence (AI) has transformative possibilities in most industries but poses ethical, social, and environmental concerns. This study explores ethical, human-centered, and sustainable AI applications through thematic analysis of recent research from 2019–2025. Results identify fairness, transparency, accountability, usability, and sustainability principles. AI increases agricultural efficiency, healthcare, personalized education, and inclusion, but bias risks, privacy violations, and environmental consequences remain. Integration of ethics, human-centered design, and sustainability is key to accountable, inclusive AI that accords with public good and Sustainable Development Goals.
Key Words**:** *Artificial intelligence (AI), Ethical AI, Human-Centered AI, Sustainable AI, Societal Impact, Sectoral Applications*.

Introduction:

Artificial intelligence (AI) has swiftly grown from a technical curiosity to a revolutionary force influencing many aspects of human existence, yet its benefits and risks are inextricably linked to ethical, social, and environmental problems. The necessity for ethical and moral frameworks that assure justice, accountability, and transparency in AI deployment is central to current discussions [1],[2]. Traditional AI ethics methods, which are generally based on abstract ideas, are being supplemented with human-centered AI design techniques that prioritize usability, trust, and congruence with human values [3]. This paradigm shift puts humans not just as end consumers, but also as active participants in the design, implementation, and regulation of AI systems.

Applications of AI must strike a balance between human rights, privacy, and security; governance mechanisms are required to stop algorithmic prejudice, data exploitation, and spying [4]. AI helps with resource optimization, crop monitoring, and precision farming in agriculture, improving food security and lessening its negative effects on the environment [5]. AI in healthcare enhances access for marginalized people, diagnostic accuracy, and resource allocation, yet bias and accessibility still present difficulties [6]. Concerns about inclusivity, digital inequalities, and ethical data usage are raised by the way AI in

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education personalizes instruction and gets pupils ready for an AI-driven future [7].

Financial technologies highlight how artificial intelligence might improve financial inclusion, particularly in developing countries, by allowing microcredit, fraud detection, and inclusive banking services for excluded groups [8]. To prevent the perpetuation of systemic inequalities, AI applications need meticulous consideration of bias, security, and transparency. Probabilistic risk assessment and complex systems methodologies are crucial for identifying and mitigating unexpected organizational and societal consequences [9]; [10]. Along with risk, there is a rising push to analyze AI's social effect in systematic ways, utilizing tools like AI impact assessments and sustainability-oriented frameworks that link AI adoption to human well-being and the Sustainable Development Goals.

Taken together, these viewpoints demonstrate that the promise of AI cannot be achieved unless ethics, human-centered design, and environmental concerns are included into its foundations. This article investigates the ethical, human-centered, and sustainable uses of AI, including developing frameworks, sector-specific use cases, and risk management and social impact assessment methodologies, with the objective of fostering responsible and inclusive AI research.

Review of Literature:

The impact of AI structures on morality and utilitarianism is examined by Paraman et al. [11], who emphasize ethical principles, responsibility, and responsible AI implications. In order to guarantee that AI is in line with human needs and the interests of society, Auernhammer et al. [12] promote philosophical and design approaches that highlight human-centered AI for social well-being. Oladipo et al., [13] discussed AI and human rights, including privacy, prejudice, surveillance, access, and accountability. AI improved efficiency and capabilities, but it also threatened privacy, perpetuated prejudices that may lead to discrimination, and highlighted ethical questions about monitoring and security against civil liberties. Uneven access to AI technology might worsen social and economic inequality. The report examined these problems and assessed current practices and legislation, providing frameworks to assure human rights-compliant AI development and deployment and practical suggestions for a fairer and more responsible AI ecosystem.

Adewusi et al., [14] investigated how AI improves precision farming, resulting in increased food security, efficiency, and sustainability. AI technologies enhance irrigation, track plant health, detect illnesses, and save resources. Examples of these technologies include computer vision,

sensors, drones, and decision support systems. Autonomous cars and robotics increase operational efficiency even further, but multidisciplinary study is necessary due to data security, ethical issues, and rural digital gaps. Chapman et al. [15] used focus groups, interviews, and questionnaires with therapists and service consumers to investigate stakeholder acceptability of AI in mental health treatment. The results emphasized the elements that influence trust and offered recommendations for creating trustworthy, palatable, and user-and practitioner-friendly AI systems. With an emphasis on academic integrity and appropriate usage, Mulaudzi et al. [16] investigated lecturers' opinions on AI in individualized higher education. The research focused on ethical behaviors via AI-detection technologies, test changes, student disclosure, and the need of institutional training and openness using the Technology Acceptance Model and theme analysis.

Although prior studies examine at sustainable, human-centered, and ethical AI applications, there is still a dearth of actual data on cross-sector integrated frameworks. By combining sustainability, usability, and ethics for real-world, cross-sector AI implementation, this research fills this gap.

Research Methodology:

This study uses a qualitative thematic analysis to investigate ethical, human-focused, and sustainable uses of AI in agriculture, healthcare, education, and finance. It discovers salient themes, conceptual frameworks, risks, and social implications by examining patterns and relationships in available literature instead of quantitative data.

Data Sources: Secondary data from 2019–2025 were scanned, such as peer-reviewed articles, conference papers, policy and sectoral reports, and preprints. Keywords were "societal impact of AI," "AI risk assessment," "AI sustainability," "human-centered AI," and "ethical AI." Sources were filtered for relevance, credibility, and usefulness.

Data Analysis: Thematic analysis was conducted in three stages: (1) the identification of overarching themes such as ethics, human-centered design, sustainability, sectoral applications, and societal risks; (2) thematic categorization by sector to identify challenges and opportunities; and (3) synthesizing knowledge to generate an integrated understanding and inform a conceptual framework.

Conceptual Framework:

The conceptual framework highlights ethical principles (fairness, transparency, accountability, privacy, human rights), human-centred design (inclusiveness, usability, participatory design),

sustainability (resource efficiency, environmental protection, equitable development), and sectoral applications (agriculture, healthcare, education, finance).

Limitations: As literature-based, the study does not capture quickly developing AI technologies exhaustively. Sectoral examples are representative rather than exhaustive.

Result and Discussion

This section summarizes key findings on ethical, human-centered, and sustainable AI across sectors. It highlights benefits, practical applications, and existing gaps in adoption, usability, and environmental impact.

Ethical AI Frameworks

Ethical AI frameworks have since developed to cater to the intricacies of AI systems, focusing on ethics-driven sustainability in deploying AI. Ethics, with its philosophical foundations, guides conversation regarding virtues, social responsibility, and wider AI deployment issues [17];[18]. Governance and ethical principles are central to driving AI-led technological diversification and aligning with sustainability values [19].

Spinello [20] brings into focus rights to physical privacy and security and suggests measures for countering related risks. Although previous research tends to emphasize principles rather than real-world effects, integrated advice for developers, regulators, and policymakers is needed [21]. Human-centric views predominate, with studies on moral agency in machines and advocating for ethical frameworks that acknowledge challenges, develop ethical intentions, and provide future-proof AI practice[22]. Practical factors like adoption, organizational culture, and toolkit implementation are under researched, though.

Human-Centered AI Design

Human-centered AI (HCAI) focuses on designing AI systems that are human-centric, value-driven, need-oriented, and trustworthy. Core principles are fairness, transparency, accountability, privacy, and usability, all of which together give rise to user empowerment and ethical conformance [23]. Fagbola and Thakur [24] identified interpretability, explainability, and safety as key, bringing in tools like FairML and IBM AIFairness 360 to aid these design principles. For instance, Ahmad et al. [25] introduced RE4HCAI, a human-centric methodology covering user needs, model demands, data issues, explainability, and trust that supports open and user-focussed AI systems. In clinical applications, Beltrão et al. [26] show how personas, scenarios, and journey maps in clinical AI systems enhance decision-making through

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synchronization with user demands. Correia et al. [27] also focus on user acceptance using models such as UTAUT and the Technology Acceptance Model, pointing to trustworthiness and adoptability as essential drivers of AI adoption. Privacy continues to be a top issue, especially for health-related AI use cases, with shared responsibility models being suggested to protect user data and ensure trust [28]. Together, these studies highlight that HCAI calls for balancing ethical values, usability factors, and stakeholder requirements to create AI systems that are both effective and responsible.

Sustainable AI Applications

Much of recent work has been aimed at developing AI in ways that consider the sustainability effects of AI, specifically the environmental footprint of AI system development and deployment. Research by [29] highlighted energy usage in AI algorithms, especially machine learning and natural language processing. Crawford and Joler [30] take a more holistic view, examining the life cycle of AI systems and their interfaces with the environment, resources, labor force, labor practices, human capital, and users.

The term "AI for Sustainability" and the connection to the Sustainable Development Goals (SDGs) have become increasingly important in international AI ethics discussions. Coeckelbergh [31] discussed how AI can resolve environmental and social issues, while Floridi et al.[32] highlight AI's capacity to enhance human agency and support the creation of a "Good AI society" through solving complex environmental and social problems.

Collectively, these studies underscore the dual role of AI: minimizing its ecological footprint and leveraging its capabilities to advance environmental and societal sustainability.

Sector-Specific Applications

Adaptive learning and intelligent tutoring in education personalize learning, increase engagement, and improve academic performance [33]; in agriculture, AI improves precision farming, crop yield forecasting, and resource optimization using UAVs and IoT irrigation [34]; in healthcare, predictive analytics and personalized treatments improve patient outcomes and operational efficiency [35]; and in finance, AI supports credit scoring, fraud detection, and financial inclusion, improving decision-making and access to services [36].

Cross-Theme Insights and Gaps

Table 1 highlights how ethical, human-centered, and sustainable AI converge across sectors, showing key benefits and

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remaining gaps in adoption, integration, and impact.

Table 1 Cross-Theme Insights and Gaps in AI Applications

Theme	Focus / Principles	Sectoral Applications	Key Benefits	Gaps / Limitations	References
Ethical AI	Fairness, transparency, accountability, privacy	Agriculture, Healthcare, Education, Finance	Builds trust, ensures equity	Limited real-world adoption	[17]; [20]
Human-Centered AI	Usability, stakeholder alignment, trust	Precision farming, Clinical AI, Adaptive learning, Inclusive banking	Enhances engagement and system acceptability	Few empirical adoption studies	[23]; [25]
Sustainable AI	Resource efficiency, environmental impact, SDG alignment	Agriculture (IoT, UAVs), Healthcare, Education, Finance	Reduces ecological footprint, optimizes resources	Energy and scalability challenges	[29]; [32]
Integrated Insights	Ethics + HCAI + Sustainability	All sectors	Promotes holistic, responsible AI adoption	Organizational integration, impact measurement underexplored	[19]; [31]

Discussion

AI adoption shows compelling advantages in agriculture, healthcare, education, and finance. Ethical structures promote fairness, transparency, and responsibility, and human-centered design enhances usability, trust, and stakeholder participation. Sustainability-oriented approaches consider environmental and social effects. Practical adoption discrepancies, scaling issues, and digital divides persist. Combined ethics, human-centered design, and sustainability frameworks are sparse but essential for comprehensive AI implementation.

Conclusion

AI has the potential to enhance societal well-being and sustainability if it is developed under ethical, human-centric, and sustainable principles. Successful frameworks should harmonize fairness, privacy, usability, and environmental stewardship. Future studies need to address practical adoption, empirical verification, and analyzing the impact on society. Inclusion of

such principles from the outset guarantees accessible, responsible, and effective AI that serves global development purposes

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"Impact Of Diversity, Equity & Inclusion (DEI) On Work life Balance of employees with special reference to IT Industries in Pune District.": Literature Review

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Abstract

This study investigates the influence of Diversity, Equity, and Inclusion (DEI) initiatives on the work-life balance of employees within Pune's IT sector. As Pune becomes one of India's top technology hubs, its workforce is becoming more and more diverse, with people from different backgrounds, cultures, and places coming together. DEI methods have become more and more important for helping employees stay healthy and businesses grow in this cutthroat digital world. This study examines the impact of DEI initiatives on employees' ability to balance work and personal responsibilities through a comprehensive literature review. The research indicates that equitable and inclusive workplace practices improve work-life balance while concurrently boosting employee retention, satisfaction, and productivity. However, challenges such as unconscious bias, high workload pressures, and limited managerial awareness remain key barriers. Overall, the study highlights that nurturing DEI initiatives can significantly enhance employees' work-life balance and promote long-term organizational success.

Key Words: *Diversity, Equity, Inclusion, Work life Balance, IT Industry, Pune District.*

Introduction:

Globalization, changing employee expectations, and technology breakthroughs are all contributing to the fast changes occurring in the global workforce. Along with promoting a better work-life balance, contemporary organizations are putting more of an emphasis on developing diverse, equitable, and inclusive workplaces. Despite the fact that these two priorities are frequently examined independently, they are intricately linked and affect workers' job satisfaction, productivity, and decision to stay. One of India's top IT hubs, Pune draws professionals from all over the nation and provides a wide range of career options. However, the city's IT industry is also renowned for its hardworking culture, which includes long hours, tight deadlines, and a high employee turnover rate. This frequently results in an unbalanced work-life balance, which raises employee stress levels.

Although both DEI and work-life balance are recognized as important, there is limited research on how DEI initiatives affect work-life balance, directly or indirectly, in the Indian IT industry. For diverse teams managing international projects, atypical schedules, and ongoing performance

standards, the difficulty is particularly noticeable. Gender inclusion has traditionally dominated discussions about workplace diversity in India, but international standards and Environmental, Social, and Governance (ESG) guidelines are encouraging businesses to take a more comprehensive approach that values and acknowledges a range of identities, experiences, and backgrounds. By looking at how inclusive policies and practices can assist staff in achieving a better, more satisfying work-life balance, this study fills that gap. With an emphasis on how inclusive policies result in more balanced and satisfying work lives, this study attempts to close the gap by investigating the actual effects of DEI practices on employees' lived experiences. In an effort to foster inclusive workplaces that draw and keep talent from a variety of backgrounds, IT companies are spending more money on DEI initiatives. By addressing barriers related to gender, race, age, disability, and sexual orientation, these programs seek to promote equity, equal access to opportunities, and seamless career advancement.

However, despite their potential to shape employee well-being, the impact of DEI efforts on work-life integration in India remains underexplored — a gap this study seeks to fill.

Review of Literature:

Theoretical Background: Definition & Terms

Diversity - Cox, T.

Diversity in organizations refers to the representation of individuals from different demographic backgrounds, including race, gender, and other social identities.

Equity - Robinson, G., & Judge, T. A.

Equity as a practice of providing fair access to resources and opportunities. In organizations, equity ensures that all employees, irrespective of their demographic background, have the necessary support to succeed.

Inclusion - Shore, L. M., Cleveland, J. N, & Sanchez, D. Inclusion refers to creating a workplace environment where employees feel valued, respected, and have a sense of belonging.

Diversity, Equity and Inclusion - Mor Barak, M. E.

DEI as an umbrella concept that aims to promote diverse representation, equitable opportunities, and an inclusive work culture. It highlights the importance of policies that address systemic inequality, promote equal treatment, and foster an environment where everyone feels included.

Work Life Balance - Greenhaus, Collins, and Shaw (2003)

Defined it as "the extent to which an individual is engaged in and equally satisfied with his or her work role and family role".

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Table 1: Summary of Reviewed Literature

Sr. No	Article Name	Author Name	Findings
1	The Impact of Diversity, Equity, and Inclusion (DEI) Initiatives on Organizational Performance.	Eka Wahyu Kasih & Ruslaini. (January 2024)	DEI initiatives positively impact employee performance, with diversity enhancing creativity and innovation
2	Diversity, Equity and Inclusion in the Workplace.	Rachel Minkin (May 2023)	The study finds that support for DEI varies across demographics, with women, minorities, and younger workers showing the strongest support.
3	Embracing Diversity, Equity, and Inclusion (DEI): Considerations and Opportunities for Brand Managers".	Ferraro, Hemsley, and Sands (2023)	Integrating DEI into brand identity is essential for long-term success and calls for further research on its impact on trust and engagement.
4	Enhancing Organizational Performance Through Diversity and Inclusion Initiatives - A Meta Analysis.	Okatta, Ajayi, and Olawale	Strong leadership commitment is essential for achieving impactful DEI outcomes. Inclusive policies such as unconscious bias training, diverse hiring practices, and employee resource groups significantly contribute to fostering inclusion.
5	Work Life Balance of Women Employees in the Information Technology Industry.	Vijayakumar Bharathi et al (2015)	Women employees in the IT industry recognize flexible work hours, supportive work environments, and family support as crucial for work-life balance, with their views shaped by factors like age, experience, marital status, and family structure
6	The Impact of Diversity, Equity, and Inclusion (DEI) Initiatives on Employee Performance.	Rita Mulyanti, Zahara Tussoleha Rony, Hapzi Ali (2024)	The study found that Diversity, Equity, and Inclusion (DEI) initiatives have a significant positive impact on employee performance. Specifically, diversity enhances creativity and innovation by bringing varied perspectives into organizational processes.
7	Diversity, Equity, and Inclusion in the Indian IT Sector: A Rapid Literature Review.	Kanupriya Shekhar1 and Dr. Sanjay Srivastava2 (2025)	The findings provide a framework for additional research in ascending market conditions, along with actionable recommendations for professionals. The research ultimately characterizes DEI as both a moral obligation and a strategic need for Indian IT firms aiming to cultivate diverse and efficient work environments.

Research Methodology:

Research methodology is the systematic and scientific approach used to solve various problems. At its core, it's about the thoughtful process of investigating issues in a structured and methodical way. The word "research" comes from "re" and "search," meaning to look again or to investigate thoroughly. Through research, we expand our understanding of both natural and human phenomena. Its key role is to contribute new insights and knowledge to what is already known. In this study, a qualitative meta-synthesis was chosen to analyze how DEI (Diversity, Equity, and Inclusion) programs impact work-life balance in the IT industry. The data was sourced from secondary materials, including peer-reviewed journals,

empirical research, and case studies published from 2015 to 2025.

Statement of Research Problem

Many IT companies in Pune have started adopting DEI frameworks, but there's still uncertainty about how these efforts actually affect employees' work-life balance. Factors like heavy workloads, limited organizational support, and socio-cultural challenges continue to exist. This research aims to assess whether DEI initiatives truly help foster inclusivity, reduce workplace bias, and enhance the overall well-being of employees in real-world settings.

Research Objectives:

1. To study the perceptions of HR professional & employees regarding the effectiveness of DEI practices and work life balance.
2. To identify the benefits and challenges of implementing DEI initiatives which impact Work life balance in IT Pune District.
3. To examine the impact of Diversity, Equity and Inclusion initiatives on work life balance among IT employees specifically in Pune District.

Research Design: The research design for this study is descriptive in nature. aiming to describe the impact of DEI initiatives in IT industries of Pune district. This design helped to understand the relationship between DEI initiatives and Work life balance. The data is obtained from secondary source. The time frame referred for collecting secondary data is 10 years viz. The review included peer-reviewed studies published between 2015 and 2025, written in English, and focused on workplace DEI and work–life balance in India or similar emerging markets.

Data Collection: The data is obtained from secondary source.

For research below secondary sources are referred:

Reference Books - Book of Diversity, Equity and Inclusion principles, and organizational behavior provided foundational theories and frameworks for understanding the relationship between DEI and Work life balance.

Online Database –

To obtain peer-reviewed articles, white papers, and reports on DEI initiatives and work-life balance, search databases such as Google Scholar, JSTOR, and ResearchGate. Journals: Scholarly publications like the Journal of Business Ethics and Diversity and Inclusion Studies that concentrate on DEI, HR procedures, ethics, and organizational behavior.

Data Analysis Method: To investigate how Diversity, Equity, and Inclusion (DEI) initiatives affect workers' work-life balance in Pune District's IT sector, a thorough Literature Review (LR) was carried out. This method was selected due to its capacity to integrate results from various investigations and settings. Excluded studies lacked theoretical or empirical underpinnings or had no connection to the subject.

Using academic databases like Taylor & Francis, ResearchGate, Google Scholar, Shodhganga, and JSTOR, a systematic search was conducted using keywords like "diversity, equity & inclusion," "work–life balance," and "IT industries." This approach guaranteed a targeted, excellent synthesis to investigate the impact of DEI on organizational outcomes and work-life balance.

Result

As Indian IT companies expand internationally, a diverse workforce will unavoidably arrive. However, diversity by itself does not guarantee an inclusive environment. To ensure equity, equal access, and equal opportunities for all employees, intentional and sustained efforts are required for inclusion. This is especially noteworthy because it directly affects crucial results like work-life balance and productivity. The impact of DEI (Diversity, Equity, and Inclusion) initiatives on these outcomes in Pune's IT sector is examined in this study. A careful review of the literature shows a clear correlation between well-designed DEI programs and improved work-life balance for Pune District's IT workers.

Key findings include:

Performance Boost: According to research by Kasih & Ruslaini and Mulyanti et al., DEI programs improve employee creativity, innovation, and performance in general.

Demographic Support: According to Minkin, younger workers, women, and members of minority groups are more supportive of DEI policies.

Leadership Commitment: According to Okatta et al., effective implementation of DEI depends on the active participation of leadership and inclusive measures like unconscious bias training and diverse hiring practices. **Gender-Specific Insights:** According to Bharathi et al., a large number of female IT professionals believe that work-life balance can only be achieved through flexible work schedules and encouraging workplace cultures.

Strategic Importance: According to Shekhar and Srivastava, DEI is now viewed by Indian IT companies as both a moral obligation and a competitive advantage.

Overall, research supports the idea that inclusive and equitable workplace policies foster psychological safety, flexibility, and

support networks that help workers successfully balance their personal and professional obligations. However, there are still certain challenges, especially in Pune's IT sector, such as unconscious biases, excessive workload demands, and a lack of managerial awareness.

Discussion

For IT workers in Pune, DEI (Diversity, Equity, and Inclusion) programs are essential to establishing a just, encouraging, and satisfying workplace. Since the city's workforce is diverse, inclusive practices support equal access to growth opportunities, psychological safety, and adaptability. Work-Life Balance and DEI The ability of employees to balance their personal and professional obligations is clearly correlated with DEI practices. People feel appreciated and treated fairly when policies like flexible work schedules, open career development opportunities, and equitable evaluation procedures are in place. These ideas are consistent with research conducted by Greenhaus et al. (2003), which demonstrated the important role that job and family life satisfaction play in overall wellbeing.

Bharathi et al. (2015) also emphasize the importance of flexible scheduling and supportive workplace cultures in maintaining a positive work-life balance, particularly for women working in the IT sector.

Chronic Problems Implicit Bias and Manager Awareness: In spite of strong policies, unconscious bias and a lack of managerial training limit DEI's full potential.

Workload Stress: Because of long hours and tight deadlines, IT professionals usually have to juggle work and personal commitments. Limited Scope of DEI: Gender inclusion usually takes center stage, while issues related to disability, socioeconomic background, and sexual orientation are not as fully addressed.

Crucial Takeaways for Pune's IT Firms

Carefully implementing DEI programs can enhance organizational performance and employee satisfaction. Incorporating diversity and inclusion into daily operations benefits every employee and improves the company's reputation, ability to retain talent, and creative potential in addition to wellness programs and flexible work schedules.

However, if companies wish to effect long-term change, they must move beyond short-term initiatives. In order to ensure that DEI initiatives truly improve each employee's quality of life, leaders must actively promote inclusive cultures.

Conclusion

The study shows that DEI (Diversity, Equity, and Inclusion) initiatives greatly improve the work-life balance of IT workers in Pune District. When businesses foster inclusive and equitable work environments, employees

feel appreciated and respected and are better able to manage their personal and professional responsibilities. To optimize DEI's benefits for work-life balance, businesses should spend money on leadership development to increase awareness, reduce bias, and promote accountability at all levels. Expand DEI frameworks to include a variety of identities and experiences in addition to gender. Adopt flexible work schedules that take into account the needs and circumstances of individuals. Strengthening DEI practices not only increases employee well-being but also provides businesses with a competitive advantage.

In the fiercely competitive IT industry, it helps companies retain top talent, improve performance, and establish long-term sustainability.

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Market Research of Godrej Cattle Feed in Kolhapur District"

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ABSTRACT

The compound feed market in India is one of the fastest-growing in the world, because to increased demand from the dairy, poultry, and aquaculture industries. This study examines the purchasing patterns of dairy farmers in the Kolhapur area of Maharashtra, with a particular focus on the cattle feed items sold by Godrej Agrovet Limited. 50 farmers from ten villages and ten societies participated in the study, which was carried out in the Shahuwadi and Karveer tahsils. Descriptive research techniques, questionnaires, and statistical tools like frequency distribution and chi-square analysis were used.

According to the findings, 48% of farmers buy Godrej cow feed, and 24% use it regularly and 40% regularly. The chi-square test revealed a strong correlation between farm size and frequency of purchases (calculated value 16.93 > tabular value 9.488). While small-scale farmers had lesser usage, larger-scale farmers with more livestock demonstrated higher purchasing frequency. In order to improve adoption among marginal farmers, the study emphasizes the significance of focused marketing methods and the possibility for market expansion. These revelations provide strategic guidance for the expansion of the sector and aid in the knowledge of the dynamics of cattle feed consumption.

Keywords: *Compound feed, Poultry feed, Aqua feed, Cattle feed, Desi bird, Backyard, Poultry*

INTRODUCTION

One of the world's biggest and fastest-growing markets for compound feed is India. Around 1965, medium-sized feed factories were established in northern and western India, marking the beginning of commercial and scientific feed manufacturing in that country. The primary purpose of feed production was to meet the demands of dairy cattle. The desi (or native) bird was kept primarily for its eggs, and the poultry industry was still in its infancy and limited to backyard production. For the next ten years, the Indian feed sector is going through an extremely exciting expansion phase. The feed sector in India is now expanding at a

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compound annual growth rate of 8%. The largest portion of the total feed requirement is accounted for by the poultry, aqua, and dairy industries.

Despite the enormous potential feed requirement of around 96 million tonnes, only 20.3 million tonnes were produced in 2012–2013. As the industry becomes more organized, there is a great deal of room for growth in this sector. In the upcoming years, India will surpass all other feed markets due to its rapid growth rate. Compound feed only satisfies 11 percent of the feed industry's requirements for cattle feed, 14 percent for aqua feed, and 55 percent for poultry feed. Feed Industry in India 14 Revitalizing Nutritional Security in the Indian Feed Industry The structure of the Indian animal feed market for Animal Feed Aqua, Poultry, Cattle, and Other.

LITERATURE REVIEW

Kapil *etal.(*2023) conducted a study on consumer preference and buying behaviour for cattle feed in Uttar Pradesh. They found that *quality, availability, and packaging* were major factors influencing farmers' purchasing decisions. Their research emphasized the growing popularity of *branded compound cattle feed (CCF)* even in rural areas, driven by nutritional awareness and organized marketing.

Kumar and Kumar (2023–24**)** studied the market share and consumer behaviour for Kapila cattle feed in Muzaffarpur, Bihar. Their findings revealed that *74.5% of farmers* followed dry matter feeding practices, but only *3% used mineral mixtures*, indicating low awareness of balanced nutrition. The study highlighted the dominance of *homemade feed* and the need for better outreach to promote branded products.

John and Manoj (2014) examined the cattle feed market in Kerala, focusing on purchasing patterns and brand significance. They reported that *58.33% of farmers* expected an increase in animal population, which would directly boost feed consumption. Their work suggested strategic marketing approaches to tap into the growing demand and improve brand penetration.

Manoj (2015) explored the overall trend and growth pattern of cattle feed demand in India. Using secondary data from government sources, he analysed the sector's significance in the Indian economy and proposed *exploratory strategies* for faster development, including improved distribution and farmer education.

Chaturvedi *etal.* (2024) investigated consumer behavioural patterns in the dairy supply chain. Though focused on milk products, their findings showed that *product quality and price* significantly influenced

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buying decisions, which parallels cattle feed purchasing behaviour among dairy farmers

Objectives of the Study

1. To study the buying behaviour of dairy farmers for cattle feed.

RESEARCH METHODOLOGY

4.1 Research Design

i. Descriptive Research

ii. Questionnaire and Schedule

4.2 Research Universe: the study was conducted in Shahuwadi tahasil and Karveer tahasil of Kolhapur district. Study was conducted for Cattle Feed of Godrej Agrovet Limited, Pune. Hence this company was selected purposively for the present study.

4.3 Sampling: 50 farmers spread over 10 villages were selected randomly and 10 societies were selected purposively due to their limited numbers, the details of selection of farmer's and societies, study was located in Kolhapur district, which was selected as per the suggestion of the company, Shahuwadi and Karveer tahsil was selected purposively as per the suggestion of the company, Sample comprises of marginal farmers as well as farmers with high land holding.

4.4 **Analytical tools:** The collected data were analysed by using simple statistical techniques such as average, percentage, Gantt chart, chi square method, frequency distribution method presented in tabular and graphical methods. Collected data was analysed according to the objective.

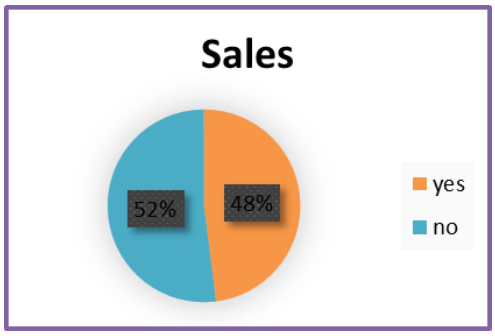
ANALYSIS AND DISCUSSION

5.1 Frequency of Product Purchase

Table 5.1. Do you Purchase the product

Sr. No.	Response	Respondent	Percentage
1	Yes	24	48
2	No	26	52
	Total	50	100

Chart: 5.1 Purchase of the product shows that 'Godrej dairy farmers' purchaser's godrej cattle feed more than 50% According to table 5.1 Out of 50 surveyed farmers, 48% purchase Godrej cattle feed, while 52% do not. This



indicates a nearly balanced market presence, with scope for expanding customer base.

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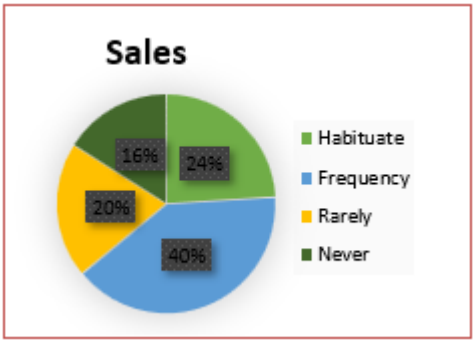
5.2. How often do you prefer Godrej Agrovet product?

Table: 5.2. Preference of the farmers

Sr.No	Response	Respondent	Percentage (%)
1	Habituate	12	24
2	Frequently	20	40
3	Rarely	10	20
4	Never	8	16
	Total	50	100

Chart 5.2

Chart 5.2 shows that 40% of farmers prefer the product frequently, and 24% are habitual users,



showing strong brand loyalty among a significant portion of users.20% use it rarely, and 16% never use it, suggesting potential barriers or lack of awareness among some segments

5.3 Frequency of Purchase of Products
Table 5.3

Framers/Frequency	Small Scale	Medium Scale	Large Scale	Total
Habitual	0	4	9	13
Frequently	2	10	14	26
Rarely	6	3	2	11
Total	8	17	25	50

Expected Value-
Table 5.4

Framers/Frequency	Small Scale	Medium Scale	Large Scale
Habitual	2.08	4.42	6.5
Frequently	4.16	8.84	13
Rarely	1.76	3.74	5.5

Table 5.5

Observed Value	Expected Value	(O-E)	(O-E)2	(O-E)2/E
0	2.08	-2.08	4.32	2.07
4	4.42	-0.42	0.17	0.038
9	6.5	2.5	6.25	0.961
2	4.16	-2.16	4.66	1.120
10	8.84	1.16	1.34	0.151
14	13	1	1	0.07
6	1.76	4.24	17.9	10.17

3	3.74	-0.74	0.54	0.144
2	5.5	-3.5	12.25	2.22
			Total=	16.939

Degree of Freedom= (coloum-1) (Row-1)
= (3-1) (3-1)
= (2) (2)
=4

X square tabular= 9.488
X square calculated= 16.93
X square tabular < X square calculated
9.488<16.93

According to above chi-square test result shows that 9.488<16.93 it means there is relation between the two variables,

Hence it is clearly showing that the relation between frequency of purchase of the cattle feed and size of the farmers i.e. Number of cattle holders of the farmers .it indicates that if small farmer means less number of cattle holder i.e.2-3 its cattle feed purchasing frequency is less & large scale farmers have cattle feed purchasing frequency is more.it show direct relation between variables.

FINDINGS

1. Spending Patterns: Of the 50 farmers polled, 48% buy Godrej livestock feed, whilst 52% don't. This suggests a fairly balanced market presence with room to grow the clientele.
2. Product Preference Frequency: A sizable percentage of consumer's exhibit strong brand loyalty, with 40% of farmers stating that they prefer the product regularly and 24% being regular users. of those segments, 20% use it infrequently and 16% never use it, indicating possible hurdles or ignorance.
3. Scale-wise Usage Pattern: There is a substantial association between feed consumption and farm size, with large-scale farmers exhibiting the highest habitual and frequent usage (9 habitual, 14 frequent).
4. Small-scale farmers exhibit higher rare usage (6) and less habitual usage (0), which may indicate restricted purchasing power or a lack of awareness.
5. The computed chi-square value (16.93) is higher than the tabular value (9.488) at four degrees of freedom, according to the results of the chi-square test. The frequency of cattle feed purchases and the farmer's size (number of cattle) are found to be statistically significantly correlated.
6. Brand Influence: Godrej Agrovet Limited exhibits a significant level of penetration across larger farms,

highlighting the significance of product type and brand in purchasing decisions.

CONCLUSION

The study provides valuable insights into the buying behaviour of dairy farmers in Kolhapur district regarding Godrej Agrovet cattle feed. While nearly half of the respondents are active purchasers, a significant portion remains untapped, indicating room for market expansion. The frequency of product usage is notably higher among medium and large-scale farmers, suggesting that farm size and cattle population directly influence purchasing behaviour.

The chi-square analysis confirms a statistically significant relationship between the size of the farm and feed purchase frequency, reinforcing the need for targeted marketing strategies. With a majority of farmers anticipating growth in cattle numbers, the demand for branded cattle feed is poised to rise. Godrej Agrovet Limited enjoys strong brand recognition among larger farms, but there is potential to increase penetration among small-scale farmers through awareness and accessibility initiatives.

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A Study of Sentiment Analysis for Business Insights Using Python and Power BI At CodeAlpha

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ABSTRACT

This study, titled "A Study of Sentiment Analysis for Business Insights Using Python and Power BI at CodeAlpha," explores customer perceptions and emotions related to shopping experiences on Amazon. The research focuses on analyzing consumer opinions, satisfaction drivers, and areas of concern by applying Natural Language Processing (NLP) techniques. Primary data was collected through structured surveys of 100 respondents, covering aspects such as shopping preferences, product satisfaction, delivery experiences, and trust in the platform. The results reveal that a majority of customers express positive sentiment, driven by factors such as product variety, pricing, and convenience, while negative sentiment primarily stems from delayed deliveries, product quality issues, and return/refund challenges. Approximately 65% of respondents highlighted competitive pricing and trust as key motivators, whereas 25% reported dissatisfaction with customer service and delivery speed. The findings were visualized using Power BI dashboards, which provided clear insights into sentiment distribution, shopping behavior, and customer expectations. The study concludes with recommendations for improving customer satisfaction through enhanced logistics, product quality assurance, and responsive support services. These insights not only benefit Amazon in strengthening its service delivery but also demonstrate the effectiveness of combining NLP and business intelligence tools for deriving actionable customer insights.

Keywords: *Amazon, Sentiment Analysis, Customer Experience, Natural Language Processing (NLP), Power BI, Customer Satisfaction.*

Introduction : In the era of customer-centric business strategies, understanding consumer sentiment has become a critical factor in shaping brand reputation and competitive advantage. This field project , titled " A Study of Sentiment Analysis for Business Insights Using Python and Power BI At CodeAlpha " focuses on examining customer opinions and emotions associated with shopping experiences on Amazon. Conducted as part of an internship at CodeAlpha, the project was undertaken to apply data analytics techniques in real-world scenarios, investigating key satisfaction drivers,

identifying challenges faced by customers, and evaluating how sentiment analysis can support data-driven decision-making. As e-commerce platforms like Amazon rely heavily on customer trust and satisfaction, analyzing sentiment offers valuable insights into shopping behavior, product perceptions, and service quality. This study employs quantitative research through structured surveys, combined with Natural Language Processing (NLP) technique such as VADER, to classify customer responses into positive, negative, and neutral sentiments. The findings are further visualized using analytical tools like Power BI and Excel, enabling the identification of meaningful patterns and trends in customer feedback. Through this internship project, actionable insights are provided to better understand consumer expectations, improve service delivery, and enhance customer experiences. The study not only highlights the significance of sentiment analysis in e-commerce but also demonstrates the effectiveness of integrating Python NLP techniques with business intelligence tools to transform raw data into strategic knowledge.

Review Of Literature :

Sentiment analysis is essential for understanding consumer opinions and enhancing business strategies. Studies show that analyzing customer reviews helps companies identify satisfaction drivers, address service gaps, and improve overall customer experience. In NLP, tools such as VADER are commonly used to classify sentiment into positive, negative, or neutral categories . Data visualization tools like Power BI provide interactive dashboards that aid in decision-making.

1. Liu, B. (2020). *Sentiment analysis : Mining opinion, sentiments, and emotions.* Cambridge University Press. This book explains how sentiment analysis works—the study of feelings and opinions in written text. It covers the key techniques used to analyze large volumes of data, helping companies understand what people like, how they view a brand, and how to make better choices.
2. Pang, B., & Lee, L. (2008). The Opinion mining and sentiment analysis. *Foundations and Trends in Information Retrieval, 2*(1–2), 1–135. This work presents a systematic review of opinion mining, focusing on computational methodologies for sentiment classification. It delineates the principal challenges inherent to this task and establishes a critical groundwork for contemporary sentiment analysis in the domains of Natural Language Processing and e-commerce.
3. Bird, S., Klein, E., & Loper, E. (2009). *A Natural language processing with Python.* O'Reilly Media. This practical guide uses Python to teach the core principles of Natural Language Processing (NLP). It covers foundational techniques like tokenization, tagging, and parsing, providing the essential skills needed to build text-mining applications such as sentiment analysis.
4. Kotler, P., & Keller, K. L. (2016). *A Marketing management* (15th ed.). Pearson Education. This source provides in-depth understanding of consumer behavior, decision-making processes, and how individuals and groups interact with products and services. Linking sentiment analysis insights to marketing strategies helps organizations design better campaigns, improve customer satisfaction, and boost brand loyalty.
5. Ferrari, A., & Russo, M. (2019). *Analyzing data with Power BI tool and Power Pivot for Excel.* Microsoft Press. This book is your guide to turning raw data into a

strategic asset. Learn how to use Power BI to connect to data sources, build analytical models, and create interactive dashboards that drive informed decisions and power business intelligence.

6. Buche, A., Chandak, M. B., & Zadgaonkar, A. (2013). Sentiment analysis of customer product review using machine learning. In the *International Conference on Communication, Information & Computing Technology (ICCICT)*. IEEE. Using machine learning, this study automatically classifies customer reviews by sentiment (positive, negative, or neutral). This enables e-commerce businesses to instantly analyze feedback, guide product improvements, and inform strategic decisions.

Research Design :

The research follows a descriptive design aimed at understanding customer sentiments and shopping experiences on Amazon. It involves collecting and analyzing primary survey data and applying the sentiment analysis techniques to classify opinions like positive, negative, and neutral categories.
Descriptive Research Design – Descriptive research is a methodological approach concerned with the precise and orderly characterization of a population, situation, or phenomenon as it exists.

Research Procedure :

1. Problem Identification : Recognized the growing need to analyze customer sentiments to improve Amazon shopping experiences.
2. Literature Review : Reviewed existing studies on sentiment analysis, NLP techniques, and data visualization using Power BI.
3. Survey Design : Developed a structured questionnaire using Google Forms (closed-ended and opinion-based questions).
4. Data Collection: Collected primary data from 100 Amazon users through survey responses. And used secondary data from research papers, journals, and books for theoretical support.
5. Data Analysis: Cleaned and pre-processed survey responses using Microsoft Excel. Applied Python NLP technique (VADER) for sentiment classification. Visualized insights using Power BI dashboards for clear interpretation.
6. Interpretation: Drew conclusions on customer satisfaction, dissatisfaction areas, and actionable recommendations for improvement.

Research Statement :

This research leverages Natural Language Processing (NLP) to classify sentiment in customer product reviews and visualizes the results in interactive Power BI dashboards. The goal is to transform unstructured customer feedback into actionable business intelligence, enabling e-commerce companies to better understand consumer sentiment and guide strategic decision-making.

Research Objectives :

1. To study customer sentiments expressed through primary survey data related to shopping experiences on Amazon.
2. To analyze and classify reviews using sentiment analysis techniques.
3. To identify areas of customer satisfaction and dissatisfaction.
4. To provide data-driven insights and solutions to Amazon through CodeAlpha.

Methods of Data Collection :

The study used a mixed-method approach involving both the primary and secondary data sources:

Primary Data – Collected from a structured Google Forms survey distributed to 100 Amazon customers, including students, professionals, and frequent online shoppers. The questionnaire focused on shopping behavior, product satisfaction, delivery experience, and overall perception of Amazon's services.

Secondary Data – Obtained from books, journals, research papers, and credible online sources related to sentiment analysis, NLP techniques, consumer behavior, and data visualization. This supported the survey findings and provided a theoretical framework.

Sampling Method :

1. Area: Customers using Amazon for online shopping across India
2. Sampling Type: A simple random sampling procedure was employed, affording each Amazon user within the target population an equal opportunity to be included in the study.
3. Population: All active online shoppers who provide feedback on products and services
4. Sample Size: 100 respondents

Data Analysis :

The data collected through Google Forms from Amazon users was analyzed using Microsoft Excel, Python NLP, and Power BI. The aim was to interpret sentiment trends, customer satisfaction drivers, and areas of dissatisfaction in Amazon shopping experiences.

Tools Used:

1. Microsoft Excel: Used for initial data cleaning, filtering, sorting, and basic statistical analysis.
2. Python (VADER): Used for sentiment classification into positive, negative, and neutral categories.
3. Power BI: Used for creating interactive dashboards and visual representations such as pie charts, bar graphs, and slicers to present customer insights.

Data Dashboard :

The Power BI dashboards display customer sentiments interactively, showing sentiment distribution (positive, negative, neutral), key shopping factors, and satisfaction vs dissatisfaction areas. They provide a clear, real-time overview of customer perceptions for easy interpretation and actionable insights .

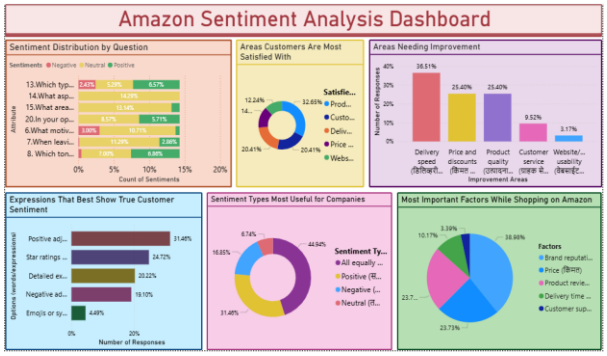
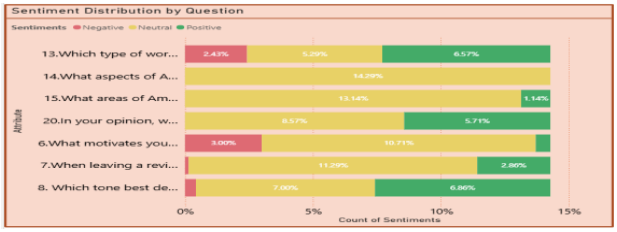


Fig. Power BI Dashboard

Chart 1 : Sentiment Distribution by Question



Source : Primary Data

Interpretation :

The data shows that positive sentiments dominate customer responses, particularly regarding review motivation (10.71%) and aspects they're satisfied with. However, significant neutral sentiment exists around how customers

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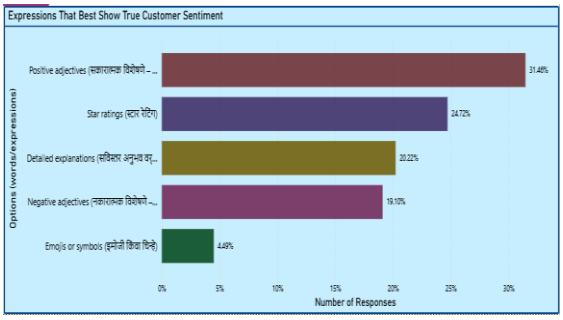
express opinions (11.26%) and areas needing improvement (13.16%), indicating uncertainty or mixed feelings. Negative sentiment is most notable in describing review tone (7%), suggesting some customers express criticism in their feedback style.

Chart 2 : Areas customers are most satisfied with

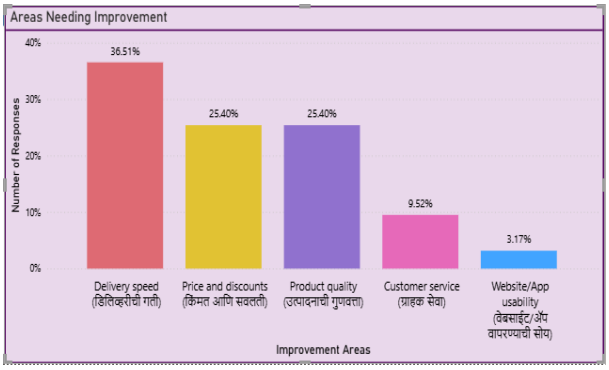


Source : Primary Data

Interpretation :

Customers are most satisfied with Product Quality (32.65%) and Delivery Speed (20.41%). This indicates that Amazon excels in providing reliable products and fast shipping. However, Price & Discounts (20.41%) and Website/App Usability (14.29%) show significant room for improvement, suggesting customers want better value and a smoother online experience. Customer Service (12.24%) is the area of lowest satisfaction, requiring urgent attention.

Chart 3 : Areas needing improvement

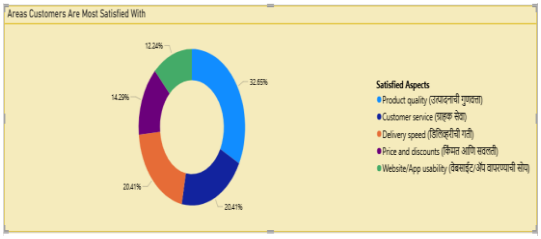


Source : Primary Data

Interpretation :

Delivery Speed is the most critical area needing improvement, indicating customers are dissatisfied with shipping times or reliability. Price & Discounts is the second biggest concern, showing customers want better value and more competitive pricing. Product Quality and Customer Service also require significant attention, highlighting issues with both items and support. Website/App Usability has the fewest complaints, suggesting the digital platform is generally user-friendly.

Chart 4 : Expressions that best show true customer sentiments



Source : Primary Data

Interpretation :

Customers believe Positive Adjectives (31.46%) and Star Ratings (24.72%) are the most authentic expressions of true sentiment. This suggests that explicit praise and quantitative ratings are trusted indicators. Detailed Explanations (20.22%) are also valued, showing that customers find thorough reviews genuine. Negative Adjectives (19.1%) are seen as slightly less revealing than positive ones, while Emojis/Symbols (4.49%) are

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considered the least reliable indicators of true feeling.

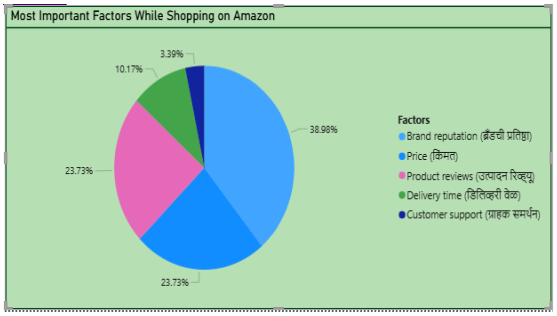
Chart 5 : Sentiment types most useful for companies

Source : Primary Data

Interpretation :

Customers believe that All Sentiment Types are Equally Important (61%) for companies to study. This indicates that customers understand the value of both positive feedback (for reinforcement) and negative feedback (for improvement). A significant portion also values Negative (31.4%) and Positive (16.5%) sentiments specifically, showing that critical feedback is seen as particularly crucial for driving change.

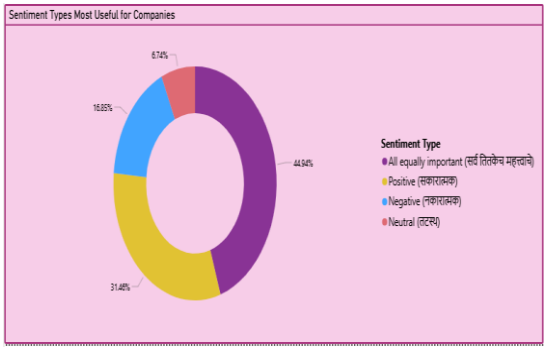
Chart 6 : Most Important Factors While Shopping on Amazon



Source : Primary Data

Interpretation :

Product Reviews (38.98%) are the most important factor for customers when shopping on Amazon, highlighting the critical role of social proof and peer feedback in purchase decisions. Price (23.73%) and Brand Reputation (23.73%) are equally important secondary factors. Delivery Time (10.17%) and Customer Support (3.39%) are less influential, suggesting that while shipping and support matter, they are not primary decision drivers compared to reviews, cost, and brand trust.



Findings :

The credibility of user-generated reviews is the most powerful asset for driving sales on Amazon, more influential than price or brand name. There is a significant reliability gap in the delivery system. While often fast, its inconsistency is the primary source of customer frustration and negative feedback. Customers are sophisticated reviewers who understand that negative feedback is valuable for improvement, not just positive praise for reinforcement. Customer Service is a critical vulnerability, receiving low satisfaction scores and being a notable area for improvement, which can severely damage brand loyalty. The high value placed on Product Quality in both positive and negative contexts shows it remains the fundamental basis of Amazon's value proposition.

Suggestions :

1. Leverage the Power of Reviews: Implement a strategy to actively encourage more satisfied customers to leave positive reviews and

star ratings, as these directly influence purchasing decisions more than any other factor.

2. Fix Delivery Inconsistency : Prioritize operational logistics to make delivery speed reliable and consistent, not just fast. This is the single most important action to reduce negative sentiment.
3. Activate a Sentiment Analysis System: Deploy the AI-based sentiment analysis model developed in this project to monitor reviews in real-time. This will allow for Rapid response to negative feedback concerning delivery or customer service, Identification of recurring product quality issues for specific items, Understanding the nuanced reasons behind neutral sentiments.
4. Revamp Customer Service: Invest in training and tools for the customer service team, focusing on proactive problem-resolution. This area has the highest potential for turning negative experiences into positive ones.
5. Communicate Improvements: Use insights from sentiment analysis to show customers that their feedback is being heard. For example, clearly stating on product pages or in follow-up emails how critical reviews have led to improvements in delivery or product quality.

Conclusion :

The analysis of the Amazon Sentiment Analysis Dashboard reveals several important insights into customer experiences and perceptions while shopping on the platform. A clear majority of sentiments recorded were positive (around 45%), reflecting overall satisfaction with product quality, pricing, and delivery services. However, negative sentiments (31%) and neutral responses (23%) highlight areas of concern that need attention. Customers reported being most satisfied with product quality (32.65%) and customer service (20.41%), while delivery speed (36.51%), pricing and discounts (25.40%), and product quality consistency (25.40%) emerged as the key areas needing improvement. When it comes to factors influencing purchasing decisions, price (38.98%) and product reviews (23.73%) were identified as the most important, followed by delivery time and customer support. Expressions such as positive adjectives (31.46%) and star ratings (24.72%) were found to be the strongest indicators of true customer sentiment, suggesting that clear product descriptions and genuine reviews play a critical role in shaping opinions. The dashboard also highlights that businesses can gain maximum value from analyzing positive and detailed expressions, which provide actionable insights into customer expectations. These findings underscore Amazon's strong reputation among customers while also pointing to persistent service-related challenges. They indicate specific opportunities for intervention, such as enhancing last-mile delivery efficiency, offering more competitive discounts, ensuring consistent product quality, and strengthening customer service support systems. The dashboard ultimately paints a picture of a platform with high customer trust but also one where continuous improvements are essential to sustain loyalty and competitive advantage in the e-commerce sector.

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Human vs Artificial Intelligence in HR Decision-Making: A Strategic Framework for Balancing Efficiency, Ethics, Fairness, and Empathy

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Abstract

The integration of artificial intelligence into human resources means that it is necessary to examine how humans. Human vs Artificial Intelligence in HR Decision-Making: A Strategic Framework for Balancing Efficiency, understand the distinction between what AI-driven decisions are based on. This chapter considers HR decision-making that balances human knowledge and effectiveness, including the values of effectiveness, equity, ethics, and empathy. We describe best practices that may be useful, or could be challenges in implementation, and suggestions from companies for a well-rounded and efficient HR structure using a range of existing literature and observational research.

Keywords*: Ethics, Efficiency, Bias, Artificial Intelligence, Human Resources, and Decision-Making*

1.Introduction

The use of AI in HR has increased, due to technological advances and digital transformations such as machine learning and data analytics. In this new environment, effective HR decision-making is an inextricable challenge.

Management of talent provides significant influence over organizational performance, employee satisfaction and retention (Davenport, 2018; Tambe et al., 2019). The human judgment and AI algorithms are important to organizations who are in search of the best outcome. This paper examines ways to balance both human and AI decision-making in HR.

2.Literature Review

2.1 The Importance of HR Decision-Making.

As a matter of fact, the quality of HR decisions is a critical factor in the success of the management. The scholars demonstrate that productivity, turnover, and organizational culture are improved by the presence of an effective HR policy (Schmidt and Hunter, 1998). Although AI may be used to make

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efficiency problems, it also poses a threat to bias, human supervision, and ethical issues (Raghavan et al., 2020). Better fiscal performance and employee satisfaction may be attained in companies where the human and AI decision-making have been integrated (Davenport, 2018).

2.2 Human and AI in the Workplace

According to SDT, three human needs are motivated to give motivation, autonomy, competence and relatedness, Deci and Ryan, 2000. Whereas human judgment and AI can offer employees such needs, fairness and accountability can assist them in doing so. The balanced decision-making also helps to increase the degree of satisfaction and organizational commitments among the employees (Boussioux, 2025).

2.3 Major themes in strategies of decision making.

This efficiency comprises machine learning and regular tasks and human judgment, and AI acts to develop mass datasets, such as routine tasks; yet, human judgement and context is in its infancy (Davenport, 2018). Pre-screening AI is more effective and faster in making decisions (Tambe et al., 2019).

Fairness: Unbiased decision-making and periodic audits provide sufficient trust and adequate decision-making among employees (Raghavan et al., 2020; Barocas et al., 2019).

Moral: emotive issues aid in morale and credibility. HR processes are ethical practices enhancing performance and retention (Binns, 2018, Boussioux et al., 2025).

Empathy: A human mastery and emotional intelligence allow workers with changes in technology and increase motivation; Goleman, 2005; Malik et al., 2023.

2.4 The Role of Leadership

HR decision-making requires the presence of effective leadership. Balancing the use of AI and employee commitment by transformational leaders improves satisfaction and engagement (Breevaart et al., 2016; Bass and Avolio, 1994).

2.5 The Effects of Organizational Culture.

Trust, inclusivity and innovation are promoted by a supportive culture. Companies that have high cultural support present improved HR decision-making and reduced turnover (Schein, 2010; Cameron and Quinn, 2011).

2.6 Work-Life Balance

Professional and personal responsibilities are managed in a good way and employees who cope with them tend to be more committed. The solutions based on AI allow flexibility and enhance engagement and productivity (Greenhaus and Allen, 2011; Hill et al., 2001).

2.7 Technology as an Enabler

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Analytics and AI improve the accuracy of decision-making, especially when it comes to large size of data. The skill development and career growth of the employees is also enabled through technology (Kirkman et al., 2004; Noe et al., 2018).

Needs mentioned above can be encountered by challenges in the deployment of strategies.

Resistance, training deficiency and poor management support can be experienced in implementing AI strategies (Moch and Basham, 2009). These challenges are critical issues which should be addressed proactively in order to be integrated well.

2.8 Future Directions

Continued studies are required on diversity, equity, and inclusion and adaptability of the organization to evolving markets (Meyer et al., 2021). Developing decision trends will assist the firms to remain competitive.

3.Integration Strategies

3.1 Efficiency

Data analysis must be covered by AI tools so that the HR professionals can concentrate on strategy choices. The staff would need the option to bypass AI suggestions and apply solutions independently. Employees should be empowered so that they can set and accomplish their goals.

3.2 Fairness

Introduce bias detection processes and frequent audits. Put in place clear equity schemes that allow your feedback and ethical deliberations.

3.3 Ethics

Establish institutional ethics, do audits and make ethical behavior publicly known. Empower the staff to communicate grievances using supportive software and establish milestone-based rewards.

3.4 Empathy

Provide mentorship, webinars, online courses, and coaching programs to create empathy. Cultivate employees to have personal professional standards and work towards them.

Challenges and Mitigation

Some of the typical challenges include resistance to change, difference in the degree of engagement, and a lack of resources. Organizations must

Disseminate the benefits of integration to employees

Supply technical resources, training aids and facilities.

Preach feedback by use of surveys, focus groups and interviews.

Leaders demonstrate behaviors wanted and works directly with employees.

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4.Challenges and Mitigation

4.1 Measuring Effectiveness

Measure success through tracking using surveys, performance measures and retention. Frequent organization analysis makes the adjustments in time and efficient.

5.Case Studies and Best Practices.

5.1 IBM

IBM uses AI with human supervision in an effort to realize balanced HR practices. Artificial intelligence aids in making compensation choices and employees retain their freedom of determination. The culture of an organization is strengthened by constant feedback and open recognition.

5.2 Unilever

Unilever is a company that focuses on equal employment and development of staff. AI eliminates candidates, and human control guarantees training and development. Frequent check-in and open practices maintain high levels of satisfaction.

5.3 Best Practices

Develop confidence between leaders and the employees.

Give employees empowerment and also offer the required support.

Support interpersonal cooperation in skills and relationships.

Make investment in technology solutions to enhance efficiency and connectivity.

6.Conclusion

Strategies have been found to be useful in HR decision-making by enhancing efficiency, fairness, ethics, and empathy. Companies that have such strategies establish favorable cultures that inspire employees. Resistance and limited resources are some of the challenges that can be mitigated by the way leaders, communicate, and provide the right support. Further studies should focus on the long-term effects of human-AI integration and the effect that cultural diversity has on decision-making in multinational teams. The human judgment and AI tools are essential in the HR practices that can be effective in the contemporary workplaces.

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Platform Power: Instagram, YouTube, and Facebook as Drivers of Destination Selection

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Research Guide

Abstract

This study examines how Instagram, YouTube, and Facebook influence tourists' destination choices using data from 250 respondents in Maharashtra. Descriptive analysis, Chi-square, and ANOVA were applied to assess demographic differences. Results show Instagram drives visual inspiration for younger and female travelers, YouTube provides information for men and professionals, and Facebook supports community validation among older groups. The study offers insights for tourism marketers to craft platform-specific strategies.

Keywords: *Instagram, YouTube, Facebook, Social media influence, Travel decisions, Maharashtra, Tourism marketing*

Introduction

Tourism in the digital era is strongly shaped by social media, where travelers seek inspiration, information, and validation. Instagram, YouTube, and Facebook have become key platforms, yet their influence differs by demographics and content type. Instagram inspires younger travelers through visual storytelling and influencer trends; YouTube informs with vlogs, reviews, and guides; Facebook supports validation among older users through groups and community discussions. While existing studies often treat social media as a whole, few examine platform-specific roles or compare demographic variations in influence. This study addresses these gaps with three objectives: (1) to analyze demographic differences (age, gender, income, occupation) in platform-specific influence, (2) to compare the role of Instagram in inspiration, YouTube in information, and Facebook in validation, and (3) to assess how content types (reels, influencer posts, vlogs, reviews, group discussions) affect destination choices. The findings advance understanding of social media's differentiated impact on tourism and guide marketers in creating targeted, platform-specific strategies.

Theoretical Background

The role of social media in tourism can be explained through several key theories. Uses and Gratifications Theory (UGT) highlights

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that travelers engage with platforms to fulfil distinct needs—Instagram for visual inspiration, YouTube for detailed information, and Facebook for social validation. Social Influence Theory and Electronic Word-of-Mouth (eWOM) emphasize how influencers, reviews, and peer communities shape destination preferences by providing both normative and informational cues. Two major theories underpin the analysis of how platform characteristics and demographics shape tourist decisions. The **Technology Acceptance Model (TAM)** explains why platforms are adopted: tourists appreciate the **usefulness** of YouTube's content for gathering information and the **ease of use** of Instagram's visual design. Separately, **Destination Image Theory** highlights social media's role in influencing **travel intentions**. This influence occurs because social media mediates and motivates between the destination's **projected images** (e.g., from marketing or influencers) and a traveler's own **perceived images** (e.g., from peer reviews).

Review of Literature

Instagram primarily acts as a visually-driven, aspirational platform that significantly affects destination appeal. Its influencer-led environment, featuring aesthetic photos, reels, and popular hashtags, is highly effective at initiating the **"dreaming stage"** of travel planning (Lalicic & Olsen, 2019). However, this high-level inspiration often requires more detailed sources to be considered complete. In contrast, **YouTube** serves as an **information-rich medium**. Travelers utilize it for consuming vlogs, reviews, and detailed guides, with research showing that these video narratives build greater **trust** and **authenticity** while lowering the **perceived risk** associated with travel decisions (Hudson & Thal, 2013; Chung & Koo, 2015).

A traveler's **age, gender, income, and occupation** are also critical moderators of platform engagement. **Younger users**, such as Millennials and Gen Z, show a preference for Instagram when seeking travel inspiration, whereas **older demographics** frequently turn to Facebook for group discussions and peer validation (Gretzel et al., 2018; Mariani et al., 2020). Furthermore, economic status influences content preference: travelers with **higher incomes** are more likely to engage with premium influencer content, while **budget-conscious groups** tend to favor peer reviews and vlogs on YouTube (Sokolova & Kefi, 2020).

While its popularity among younger travelers has declined, Facebook remains relevant for validation through community-based interactions. Group discussions, event pages, and peer recommendations provide travelers with social proof and reassurance (Smith, 2021). This highlights its continued role in the **decision-confirmation stage** of travel planning.

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Emerging research emphasizes the role of content formats in shaping influence. Short reels and influencer posts drive emotional appeal, whereas vlogs and detailed reviews provide rational justification (Hamid et al., 2021). Peer-driven group discussions, particularly on Facebook, balance both social trust and information value. Yet, comparative studies across platforms remain limited, especially in the Indian tourism context.

Research Objectives

1. To examine demographic differences (age, gender, income, occupation) in platform-specific influence.
2. To compare the role of Instagram in inspiration, YouTube in information, and Facebook in validation of travel choices.
3. To analyze how content types (visual reels, influencer posts, vlogs, reviews, group discussions) affect destination selection across platforms.

Research Methodology

This study uses a quantitative research design with a structured online questionnaire to explore how social media platforms influence travel decisions. A purposive sampling method will be applied to collect responses from at least 200 active users of Instagram, YouTube, and Facebook who engage with travel-related content. The survey will cover demographics, platform-specific usage, and preferences for content types such as reels, vlogs, reviews, and group discussions. Data will be analyzed using descriptive statistics, ANOVA, chi-square tests, and regression analysis to examine demographic differences, compare the role of each platform, and assess the impact of different content types on destination selection. Findings will be presented through tables, charts, and graphs for clarity.

Data Analysis and Interpretation

1. Demographic Differences in Platform-Specific Influence

Out of 200 respondents, 54% were male and 46% female. The majority were in the 18–30 age group (45%), followed by 31–45 (32%), and 46+ (23%). Income levels showed that 38% had less than ₹30,000 per month, 42% between ₹30,000–₹60,000, and 20% above ₹60,000. Occupation-wise, students (30%) and professionals (35%) dominated, with government employees (15%) and self-employed (20%) comprising the rest.

i. Younger respondents (18–30) showed the strongest influence from **Instagram (65%)** for travel inspiration.
ii. Middle-aged groups (31–45) relied more on **YouTube (58%)** for detailed travel information.
iii. Older respondents (46+) trusted **Facebook (60%)** for validation through reviews and group discussions.

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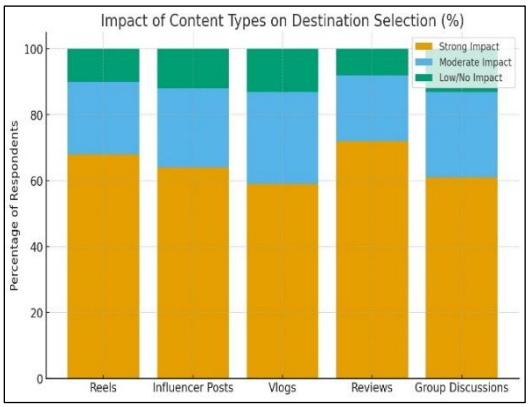
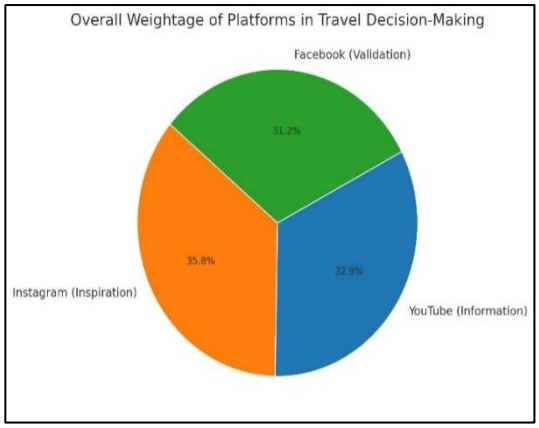
Age and occupation significantly shaped platform preference—students and younger users leaned toward Instagram, professionals toward YouTube, while older groups trusted Facebook.





2. Comparative Role of Instagram, YouTube, and Facebook

When asked about the primary role of each platform in travel decisions:

i. **Instagram**: 62% agreed it inspires destination ideas through reels and images.

ii. **YouTube**: 57% stated it provides detailed information through vlogs and travel guides.

iii. **Facebook**: 54% confirmed it validates choices through reviews and community group discussions.

Each platform has a distinct role—Instagram is strongest in creating inspiration, YouTube in providing practical details, and Facebook in confirming decisions through peer validation.

3. **Influence of Content Types on Destination Selection**

Respondents rated the impact of different content types (scale 1–5).

Content Type	Strong Impact (%)	Moderate Impact (%)	Low/No Impact (%)
Visual Reels	68%	22%	10%
Influencer Posts	64%	24%	12%
Vlogs	59%	28%	13%
Reviews	72%	20%	8%
Group Discussions	61%	26%	13%

Reviews had the strongest overall impact on destination choice, followed closely by reels and influencer posts for inspiration. Vlogs and group discussions played supportive roles in building trust and clarifying details.

Findings

The study identified a distinct hierarchy of content and platform functions in the travel decision-making process. Reviews were determined to be the most powerful factor in destination selection. Following reviews, the

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data showed that reels and influencer posts were significant forms of inspirational content. Conversely, vlogs and group discussions functioned as supplementary tools, assisting in the development of trust and credibility.

A comparative analysis confirms that each social media platform plays a distinct, age-dependent role: Instagram's core function is inspiration, attracting younger travelers (18–30) with visual content like reels and influencer posts. YouTube provides information, serving the needs of the mid-age range (31–45) via vlogs and guides. Finally, Facebook validates travel choices, being preferred by the older group (46+) for peer reviews and group discussions.

Conclusion

Social media platforms collectively guide travellers through a multi-stage decision process, from initial inspiration to final validation, by serving differentiated functions. Inspiration is primarily driven by Instagram's visually appealing content; the need for detailed information is satisfied by YouTube; and validation is reinforced by peer opinions and reviews shared on Facebook. A key finding is the superior influence of authentic content (like user reviews) over strictly promotional material, underscoring that credibility and relatability are essential components of persuasive social media communication in the travel context.

Recommendations

Social media platforms are proven to serve distinct yet complementary roles in the multi-stage traveller decision-making process. Specifically, Instagram primarily acts as a major drive for destination selection and inspiration through visually appealing, aspirational content like short reels and major influencer posts. YouTube fulfills the need for detailed information, with mid-aged users relying heavily on vlogs, guides, and itineraries for in-depth insights. Conversely, Facebook is used primarily for validation, as older traveller’s seek trust through peer reviews and group discussions. The most effective content is that which maintains authenticity and credibility, with reviews being the strongest single determinant of destination selection, even outperforming promotional material. Therefore, tourism marketers are strongly advised to adopt a platform-specific strategy: leverage Instagram for influencer and visual content to attract younger demographics, use YouTube for comprehensive, informational vlogs targeting mid-aged professionals, and emphasize user-generated reviews and community on Facebook to build trust with older traveller’s, thereby guiding traveller’s effectively from initial inspiration to final destination choice.

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The Incorporation of Artificial Intelligence into Human Resource Management: The Human Values in Sustainable Development

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Abstract

This literature review summarizes the modern-day research on the applicability of artificial intelligence (AI) in human resource management (HRM) with a specific emphasis on ensuring that human values are retained to facilitate sustainable development. Based on systematic reviews of peer-reviewed journals, conference papers, and policy documents, the paper provides a map of AI application in HR functions, the identification of ethical and social risks, including bias, lack of transparency, privacy, and dehumanization, and the discussion of frameworks and practices aimed at finding a balance between technology and human-centered values. The review ends with practical suggestions to the practitioners, policymakers, and researchers in order to make AI-facilitated HR a part of fair, resilient, and sustainable work systems.

Keywords*: Artificial Intelligence, Human Resource Management, Human Values, Ethics, Sustainable Development, Human-Centered AI, Responsible AI.*

1 Introduction

The adoption of artificial intelligence technologies has advanced at a rapid pace and altered the organizational practices, encompassing the fundamental functions of the human resource, such as recruiting, managing performance, learning and development, workforce planning, and employee experience. Whereas AI is more efficient, predictive, and personalized, fairness, transparency, privacy, and loss of human dignity are also overlooked issues. Since work is so key to human well-being and sustainable development aspirations of society, it is upon the HR professionals to ensure that they guard the use of AI in a manner that does not infringe on human values. The paper analyses the recent empirical and conceptual literature to address the main question: How can organizations introduce AI into HRM without jeopardizing and undermining human values that constitute sustainable development? Secondary questions are as follows: What are the common AI uses in HR? What are the ethical issues and governance issues? What are the

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structures and patterns that can be used to ensure the adoption of AI is human-centered and sustainable?

2. Methodology of the Review

The review is well-organized using a narrative-literature pattern that is appropriate when analyzing different empirical and theoretical works. The process involved:

1. Search of peer-reviewed articles and recently published review papers on AI in HR, human-centered AI and sustainable HR practices using database search (e.g., ScienceDirect, PubMed/PMC, Taylor and Francis, MDPI, ResearchGate).
2. Inclusion criteria: the publications (2018-2025) about the application of AI in HR, ethical/human-centered design, governance, and sustainability in working environments. Preference was made to systematic reviews, meta-analyses, and empirical studies that are commonly cited.
3. Thematic coding of the chosen articles in order to define the key areas of application, common ethical issues, suggested frameworks, and suggested governance systems.
4. Thematic syntheses into recommendations below, then practitioner recommendations and future research directions. Limitations the literature is evolving at a high rate. This review uses both peer-reviewed and open-source materials published until mid-2025 and focuses in conceptual clarity as opposed to all-encompassing bibliometry.

3. Artificial Intelligence in HR: A Thematic Introduction.

The applications of AI technologies have been performed in HR functions. The common areas of application are summarized below.

1. Recruitment and Selection Applicant tracking systems, resume parsers, and interview chatbots using AI are used to hasten the sourcing and screening of candidates. Ranking of candidates and predictive analytics is done through natural language processing (NLP) and forecasting of job fit. Such tools increase the level of scalability and consistency but also increase the risks in terms of increasing the biases when they are trained using historic hiring data.
2. Performance Management and Appraisal. The machine learning models read the performance metrics, patterns of communication and productivity indicators and supplement appraisal and the identification of high-potential employees. These tools may decrease subjective bias when created with responsibility; they may strengthen current trends of discrimination when created with incompetence; and they may contribute to the overvaluation of small productivity indicators.

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3. Learning, Growth, and Individualized Upskilling. The flexible learning systems and AI tutor systems offer trainees training materials in accordance with their learning styles and capability gaps. Personalized career-path recommenders are also made based on predictive models, which enhance lifelong learning and internal mobility.
4. Strategic Hr planning and Workforce Analytics. Workforce analytics that utilize AI are used to provide workforce planning, its attrition, talent optimization, and scenario modelling. These abilities assist companies in harmonizing human resource policies and the business objectives and sustainability policies in the external environment.
5. Workplace Well-being, Experience, and Retention. Engagement survey sentiment analysis, chatbot-powered employee helpdesk, and proactive well-being notifications are sentiment tools to support employee experience. In a sensitive manner, AI can make it possible to provide early interventions and better services.

4. Ethical, Social, and Governance Problems.

The literature demonstrates various pools of issues in the implementation of AI in HR.

1. Bias and Fairness Historical bias in the training data can be transferred to AI models and result in discriminatory results based on gender, race, age, and other protected factors. The bias needs to be addressed by actively curating data, being fair with models, and auditing on a continual basis.
2. Transparency and Explainability: The research must be transparent and explainable. Black-box models that are not transparent hinder the capacity of employees to comprehend choices that are made concerning their professional lives. Procedural justice and trust require explainability methods and interpretations that are easy to understand.
3. Privacy and Data Governance HR AI solutions handle personal information of a sensitive nature. Misuse, over-surveillance, and breach of the law of data protection are possible risks. Powerful privacy-sensitive policies, minimization principles and consent systems by employees are required.
4. HR dehumanization and Deskilling. Excessive automation poses a threat of diminishing human discretion on critical decisions, undermining of human empathetic managerial actions, and deskilling of HR professionals unless AI is applied to supplement and not substitute human capacities.
5. Legal/regulatory Compliance. There are new regulations (data protection, AI governance) that have compliance

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requirements. Organizations have to work with a shifting legal environment and secure rights, redress, and accountability provision towards their employees.

5. Conceptual Relationships between Human Values and Sustainable Development.

Sustainable development is based on human values of dignity, fairness, autonomy, privacy, and inclusion.

The implementation of AI in HR should thus be evaluated not only in terms of efficiency benefits but also in terms of their effects on these values, which, to turn, also influence the long-term social sustainability.

5.1 Human-Centered AI and Industry 5.0.

Human-centered AI (HCAI) focuses on human-agency-supporting systems, capability-enhancing systems, and systems with ethical considerations that are designed and deployed. Empowering AI in HR with the principles of HCAI would foster the results of worker-centric in line with the wider Industry 5.0 vision.

5.2 AI and the Sustainable Development Goals (SDGs).

Responsible AI in HR has the potential to support such SDGs as decent work and economic growth (SDG 8), reduced inequalities (SDG 10), quality education (SDG 4), and gender equality (SDG 5) because it supports equitable hiring, targeted upskilling, and equitable work practices.

6 Best Practices and Frameworks of Value-Conscious AI in HR.

The literature offers various measures and governance systems to bring AI into human values.

6.1 Ensuring an ethical and multi-stakeholder governance:

This approach is achieved through collaboration, transparency, and accountability of capital flows (Cajiita et al., 2016). HR, data science, employee, and legal representatives are part of AI ethics cross-functional committees which guarantee different points of view in design and monitoring of systems.

6.2 Human-in-the-Loop (HITL) and Human-on-the-Loop (HOTL):

Human-centered software development or software engineering (HSE) constitutes a software development approach that includes human interaction throughout every phase of the software development life cycle (SDLC). The accountability and retention of human judgment is accomplished through design patterns that ensure that there is human supervision of consequential decisions, e.g., final hiring decisions or disciplinary actions.

6.3 Technical Safeguards and Fairness-by-Design.

Some of the techniques are bias mitigation at both data and algorithmic levels, fairness-conscious learning, counterfactual checks,

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and frequent bias audits using representative test sets.

6.4 Explainability and Employee Communication.

Clear records (model cards, data sheets), user friendly descriptions, and appeal and redress mechanisms enable employees and generate trust.

6.5 Privacy-Saving Architectures.

Data minimization, anonymization, differential privacy, and secure multiparty computation are some of the techniques that minimize privacy risks linked with sensitive HR data

6.6 capacity building and ethical literacy.

Preparing HR specialists to be AI-literate, ethically responsible, and data-governed is a way to have informed custodianship and minimize possible malicious deployments.

6.7 Focus on Organizational Values and Sustainability Goals.

Incorporating AI ethical policies into the broader sustainability plans will make sure that AI deployments will not be used to rather promote short-term efficiency gains without social and environmental interests in the long-term.

7.Recommendations Practical to Organizations.

Based on the analyzed literature, this section provides the practical steps that could be taken by HR leaders.

1. **Carry out Impact Assessments**: Algorithms Carry out Algorithmic impact assessments (AIA) prior to deployment to determine the possible harms and mitigation routes.
2. **Set up Governance Structures**: Form ethics boards containing employee representatives and distinct responsibility lines to AI systems employed in HR.
3. **Prefer Explainability:** High-stakes decisions made based on interpretable models as well as making decisions that are transparent and actionable to impacted employees. Introduce
4. **Continuous Monitoring:** Drift, bias, and unintended consequences Monitoring in real-time; perform periodic auditing.

8. Future Research Directions

The review identifies some gaps and potential areas of study:

Longitudinal Studies: The socio-organizational effects of AI-based HR systems longitudinally.

Contextual Fairness: Research on the conceptualization of fairness based on cultural and industry-specific measures, instead of blanket measures.

Interdisciplinary Frameworks: Interdisciplinary research that involves ethics, law, organizational behaviour, and AI to create an overall governance model.

Measures of Human Values: Human values (dignity, autonomy, trust) Measures of human

values (dignity, autonomy, and trust) in HR-AI measures.

Policy Review: Comparative literature on the effectiveness of various types of regulatory measures to safeguard the rights of workers in AI situations.

Conclusion

AI offers HR powerful tools of enhancing efficiency and individualization and strategic savvy. It is the potential of the technology that will, however, be adopted in a sustainable way when organizations plan, manage and introduce AI in a way that upholds human values and with a more social motive. The main characteristics of aligning AI with sustainable development include human-focused design, good governance, explainability, fairness-by-design, and always preparedness in the functions of HR.

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Measuring AI's Contribution to Sustainable Development Goals (SDGs)

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Abstract

The 17 Sustainable Development Goals (SDGs) set forth in the UN's 2030 Agenda serve as a roadmap for international initiatives aimed at promoting social fairness, economic expansion, and environmental preservation. These goals are now being advanced in large part by artificial intelligence (AI), which provides solutions in the areas of energy management, urban planning, healthcare, education, and climate mitigation. The advantages of AI are not always felt, despite its promise; issues like algorithmic prejudice, excessive energy consumption, and unequal access to digital resources highlight the need for careful consideration. This study investigates ways to evaluate AI's contributions to the SDGs, such as employing mixed-methods approaches, conducting ethical audits, analysing environmental implications, evaluating social and human-centered outcomes, and connecting AI applications to particular indicators. Indian case studies show how AI may be used to improve healthcare, customise education, and maximise renewable energy.

Indian case examples show how AI may be used to improve healthcare, customise education, maximise renewable energy sources, fortify urban infrastructure, and combat climate change endeavours. Isolating AI's particular effects, data scarcity, ethical trade-offs, and the absence of standardised evaluation frameworks are some of the main obstacles. The study emphasises that in order to fully realise AI's transformative potential for sustainable development, deliberate, human-centered strategies that guarantee alignment with societal needs and global sustainability goals are just as important as technological innovation.

***Keywords**: AI applications, Contribution, Sustainable Development Goals, etc.*

Introduction

The 17 Sustainable Development Goals (SDGs) are outlined in the United Nations' 2030 Agenda as a common road map for attaining ecological balance, social justice, and prosperity. Although artificial intelligence (AI) is becoming more widely acknowledged as a force behind advancement in many fields, its effects are not consistent and are difficult to measure. Positively, AI tools facilitate effective renewable energy systems, assist climate-smart agriculture, and enhance medical diagnostics. However, the risks of unintended harm are also highlighted by worries about biassed algorithms, the high energy requirements of large-scale models, and growing digital divides. In order to make sure that innovation is both responsible and in line with global development aspirations, it is crucial to assess how AI contributes to the SDGs.

Strategies for Measuring AI Effectiveness in SDG Implementation

A thorough, multifaceted methodology is needed to assess how Artificial Intelligence

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(AI) contributes to the Sustainable Development Goals (SDGs). Beyond its technical capabilities, AI has an impact on social, ethical, and environmental outcomes. Both quantitative and qualitative approaches are necessary to capture these characteristics. Important strategies consist of:

1. Linking SDG Indicators to AI: AI solutions must to be methodically connected to certain SDG metrics. For instance, in India, AI-powered medical devices have been linked to indices of maternal and paediatric health, including declines in mortality and advancements in early disease diagnosis (Gupta, 2024). Similarly, AI applications in agriculture can be associated with SDG targets related to food security and crop productivity.
2. **Assessing Social and Human-Centered Outcomes:** Social impact metrics evaluate inclusivity, equity, and accessibility. AI tools should benefit marginalized communities, individuals with disabilities, and remote populations (Mandwe, 2025). Equity-focused assessments ensure AI interventions reduce, rather than exacerbate, social inequalities.
3. **Ethical Evaluation and Auditing:** Ethical audits examine AI systems for fairness, accountability, and transparency. In India, AI governance frameworks emphasize algorithmic fairness and explainability, particularly for public sector and healthcare applications (Bhatia, Applications of AI in attaining Sustainable Development Goals, 2023). Ethical assessment prevents unintended harm and promotes trust.
4. **Environmental and Sustainability Assessment:** AI models, especially large-scale ones, can consume significant energy. Sustainability footprint analysis evaluates carbon emissions and energy consumption to ensure AI deployment aligns with environmental goals (Kumar, 2025).
5. **Mixed-Methods Evaluation:** Combining statistical analysis with qualitative methods allows for a nuanced understanding of AI's impact. Stakeholder interviews, participatory workshops, and case studies complement quantitative data, capturing real-world outcomes in diverse contexts (Pal, 2024).

AI Contributions to Selected SDGs

SDG 3: Good Health and Well-being

AI is improving healthcare by enhancing diagnostics, accelerating drug discovery, and enabling early detection of diseases. In India, AI-assisted imaging has improved tuberculosis and cancer detection in low-resource regions (Vyas, 2024). AI-based predictive models also help forecast disease outbreaks and optimize healthcare resource allocation, contributing to better health

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outcomes and pandemic preparedness (Gupta, 2024).

SDG 4: Quality Education

AI-powered adaptive learning platforms personalize instruction for students, enhancing engagement and outcomes. Natural language processing tools reduce barriers for students with limited language proficiency or disabilities (Mandwe, 2025). AI also supports educators by providing analytics to monitor progress and design interventions, thereby increasing inclusivity in education.

SDG 7: Affordable and Clean Energy

AI supports energy sustainability by predicting renewable energy availability, managing smart grids, and optimizing industrial efficiency. These interventions reduce carbon emissions and increase access to affordable energy, including in rural and underserved regions of India (n.d.).)

SDG 11: Sustainable Cities and Communities

Urban applications of AI enhance traffic management, waste collection, and disaster preparedness. Predictive algorithms optimize public transport routes, reduce congestion, and improve emergency response systems (Bhatia, 2023). AI-driven urban planning increases efficiency, resilience, and inclusivity in Indian cities.

SDG 13: Climate Action

AI contributes to climate action by refining predictive models, enabling precision agriculture, and monitoring environmental changes. In India, satellite-based AI tools track deforestation and optimize water and land use, supporting both mitigation and adaptation strategies (Kumar, 2025; Mandwe, 2025).

Challenges in Measuring AI's Impact

Attribution Complexity: Isolating AI's contribution from other technological or policy interventions is a challenging task. Data Limitations: Lack of digital infrastructure in marginalized regions creates measurement gaps (Pal, 2024). Ethical Trade-offs: AI-driven efficiency gains may increase energy consumption or exacerbate inequalities. Lack of Standardized Frameworks: Currently, there is no universal methodology that links AI performance to SDG indicators. Overestimation Risks: Overhyped expectations may exaggerate AI's actual impact (Gupta, 2024).

Policy Implications

To maximize AI's contribution to sustainable development, policymakers, international organizations, and civil society should develop standardized frameworks for assessing AI's SDG contributions. Conduct regular ethical audits to ensure fairness, accountability, and transparency (Bhatia,

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Applications of AI in attaining Sustainable Development Goals, 2023). Promote multi-stakeholder collaboration, including local communities, academic institutions, and the private sector (Mandwe, 2025). Facilitate international partnerships to support developing nations in adopting AI responsibly, mitigating global digital inequities (n.d.).

Recommendations

1. Establish a Global AI-SDG Index to benchmark AI contributions across countries, sectors, and SDGs.
2. Implement mandatory reporting and transparency protocols for AI initiatives.
3. Encourage inclusive evaluation practices, involving governments, NGOs, and local communities.
4. Strengthen capacity building in developing regions to enable accurate monitoring and responsible adoption of AI (Pal, 2024).
5. Integrate sustainability considerations into AI deployment, including energy efficiency and environmental footprint assessment (Kumar, 2025).

Conclusion

Artificial Intelligence holds significant potential to accelerate progress toward the Sustainable Development Goals by improving healthcare, education, energy management, urban planning, and climate action. However, its benefits are not automatic; systematic evaluation is necessary to ensure that AI contributes positively across social, ethical, and environmental dimensions. Measuring AI's impact through indicator mapping, social and ethical assessments, sustainability analysis, and mixed-methods evaluation allows stakeholders to capture both tangible outcomes and contextual nuances.

To prevent overestimating AI's benefits, issues including data gaps, attribution difficulty, ethical trade-offs, and a lack of standardised frameworks must be resolved despite its potential. To guarantee fair and responsible adoption, policymakers, researchers, and organisations must put strong norms into place, encourage openness, and cultivate inclusive collaboration. AI can be used as a potent instrument for inclusive and sustainable development by combining sustainability considerations, ethical audits, and capacity-building initiatives, especially in developing nations. Essentially, the advancement of SDGs through AI depends not just on technology progress but also on intentional, human-centered policies that match the deployment of AI with environmental sustainability and societal aspirations. Adopting evidence-based monitoring and setting global benchmarks, such an AI-SDG Index, can help guarantee that AI realises its revolutionary promise while reducing unintended consequences.

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Rightsizing Organization by Layoff: Impact of AI, Low Performers, Employees with Duplicate Roles, Impact of Employees in Good or Bad Books- A case study (Management)

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ABSRACT

Backdrop: *The market scenario and forces are that, due to the vibrant and ambitious plans of the company/organisztion. They recruit staff and keep them on benches and sometimes make them skilled as need by their clients. In a few situations, companies recruit due to the obligation. As we know, the market is highly volatile, and nobody knows what is next. Thus, the illusion of rosy and prosperous happing looks in the offing.*

On the other hand, stakeholders, more particularly shareholders, always demand a better book value of shares, a higher share price, and a higher dividend. This is indeed possible when the company perform better and books a handsome profit. Having said this, which is indeed very comprehensive, packed with every individual's performance, contribution, new outlook of the company and a lot more parameters.

Keywords: *positive, negative, emotional motivation, pricy ex gratia, lien, right person for right job, vibrant marketing strategies, AI technology, etc*

Backdrop:

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On the other hand, stakeholders, more particularly shareholders, always demand a better book value of shares, a higher share price, and a higher dividend. This is indeed possible when the company perform better and books a handsome profit. Having said this, which is indeed very comprehensive, packed with every individual's performance, contribution, new outlook of the company and a lot more parameters. Among all, the present case reveals three basic situations to set-right viz,

a) **Impact of AI -** Artificial intelligence has become a significant factor in workforce reductions. More than 11,000 workers have been let go by companies like Accenture, whose CEO Julie Sweet has stated clearly that they are "exiting employees we can't educate in AI skills. Because AI efficiently automates jobs that were previously performed by younger personnel, entry-level employment is being most severely impacted. Businesses are finding that they can reduce entry-level staffing because AI can handle predictable, tech-savvy labour that was previously performed by college graduates. Since 2023, the technology industry has over 89,000 layoffs, with

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over 27,000 of those losses solely attributable to AI-driven redundancy.

b) **Low performers** – performance appraisal is the main tool to assess the employee's performance in the given role and their total dependability. The Job Description shall be the core yardstick for the evaluation.
c) **Employees with duplicate roles** – in most of the organization, the culture of General Manager, Dy.GM and assistant GM are prevailing for the same nature of work, but this has a direct reflection on the financial performance of the company. Yes, duplicate role for the same nature of work.
d) **Impact of employees in good or bad books** – you know that experience is the best teacher, and in the workplace the phenomenon of good or bad books is very common. The person must necessarily classify the bogey of positive motivation, negative motivation and very important but dangerous is the Emotional Motivation. The assessment of the above-mentioned motivation is really a part of wisdom.

It witnesses that one who accepts accountability and responsibility sportively at the workplace is deemed to be a Positive Motivator; on the contrary, one who is in denial is certainly a Negative Motivator, and one who sycophantly plays Emotional tr may be on experience, tall talk, belongingness, hearsay, nuisance talk, caste and creed, etc., really dangerous Emotional Motivators. And one should be very careful with the class of people.

Case Insight:

The name of the Organization is not revealed; hence, it is referred as it, and the employees are in huge numbers from various organization may be from MNCs, Reputed Indian Corporates and a few private organizations. All these employees are referred as 'They / Their / Them' in the case discussion.

The performance of the Organization was good, of course in tune with the targets of Its. But the serious competition, made compulsion to spend more on the advertisement and campaign meaning thereby the spending ratio on sales has increased and sales have fallen short to the targets. In the Annual General Meeting, shareholders uproar on the removal of the CEO and demand to replace with a dynamic and workaholic CEO since there was no escalation in the share value.

Now, Its Management has forcefully and painfully taken very stern action on their present CEO, resulting in removal. The appointment of a new CEO indeed has become very challenging to meet the demand of the shareholders. In short, shareholders want their share price should increase with better book value of their shares and better dividends year after year.

A new CEO has been appointed who has timeless experience, exposure and hardcore right in the spirit of the organizational growth. CEO from the relevant field with rich and resourceful contributions took over the charge of the It.

The CEO plans to meet the challenges:

The new CEO plan and took very dynamic and fruitful decisions. Prior to that, he studied the few essential yardstick, they are as

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follows, **First Move:** The new ECO focussed on **Net Profit** by virtue of enhancing maximum market share of their products, with various marketing tools based on region wise strategies. Making a right choice for the right segment. He never took into the gross profit and market potential into the account rather focussed on the net profit and the real market share of its products.

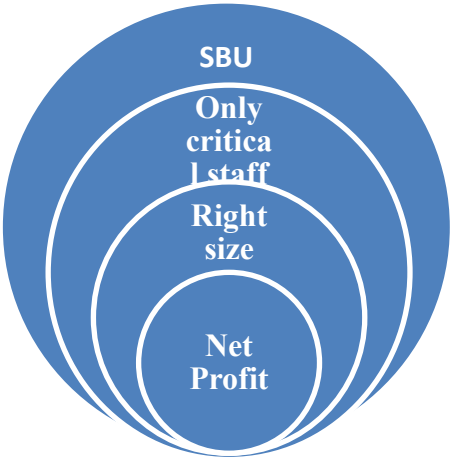

Figure No. 1

Second Move: He drastically made a move to have only right size staff to the operating units rather keeping dual staff like, General Manger and down the line deputy etc., its means one work for the staff rather than more staff in the same nature of work.

Third Move: He kept only critical and essential staff, which is resourceful and contributing to the organization rather than a number game.

Fourth Move: He essentially created Strategic Business Unit (SBU), it means every unit need to earn profit for its own survival rather than a unit in the organization.

Prudent Move by CEO: His intellectual experience with deep source of his knowledge, without any kind of external influence. He diagnosed all the sections and department of the Organization and its staff. As a CEO, he kept the Organization growth as s foremost priority. His prudent approach in interest of Organization on the following parasite.

1) AI technology in SBU
2) Low performers
3) Employees with duplicate roles
4) The bullshit of employees in good or bad books

CEO has prudently used above Four Moves to come to a conclusion and decided to right size the organization by layoff of 10% workforce viz almost 10,000 employees overall. He was very cautious in assessing the acceptance of accountability and responsibility, Positive Motivator, Negative Motivator and Emotional Motivator (he denotes emotional motivator in organization is exploitation of authority, which hazardous in working place). On occasion of golden handshake Organization offered very sustainable payment of ex gratia viz almost 11-month salary to the outgoing employee. And in the future recruitment in the Organization, they shall lien for their role.

Aftermath Organization Sentiment in Market: This drastic reshaping and rightsizing of the Organization left the silence message in the market, and the buying of shares took place to its peak and gradually the share price given better momentum in share price increase. On top of that the Organization as a whole has been working with more efficiency and effectiveness. The obvious reason was only the needed and seriously contributing staff were only with Organization.

Findings of the case: If we look to the findings of the case, it has met the whole requirement of stakeholders and more particularly the shareholders. The wisdom and self-analysis made by the CEO was really

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very analytical to bring back the glory of the Organization. The major case findings are,

a) Use of AI technology in SBU as given remarkable cost cutting on manpower.
b) He used his deep knowledge, intellectual experience, resourceful exposure, while diagnosing the Organization and market. He studied and understood all four moves. That was the basic need of the Organization and accordingly he planned.
c) He himself on the field to see the only right thing should move rather than on any kind of influential decision, that may
d) create chaos. While doing this he dealt brilliantly on handling the situation to set-right viz, Low performers, Employees with duplicate roles and employees in good or bad books.
e) He took the board in his confidence by explaining the payout and the benefits over period of time and very significant the sentiment of market and growth of business (only result oriented staff with Organization other were out).
f) He took all layoff staff in confidence by offering very pricy ex gratia of 11-month salary and lien on the recruitment if any.
g) He had a plan for the retained staff. He motivated positively with commensuration their salary etc.,
h) His aggressive and robust marketing inputs has increased the sales by almost 30% and very important point was the expenses to sales was really very less. Thus, the Organization earned almost 40% more profit than earlier years.
i) His modus operandi in rightsizing was crystal clear as below,

Based on the model he took very prudent move and set right the organization on its right path as felt and needed by the

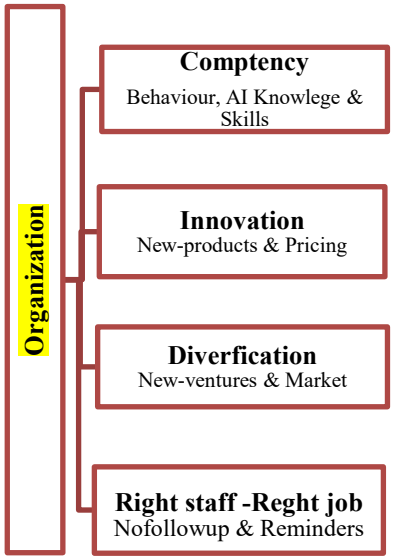

Figure No.2: **Rightsizing Model**

stakeholders more particularly shareholders of the Organization. On other hand he gave good ex gratia to the layoff staff and the efficient staff were also happy that the culture of working environment cultivated positive by removing negative motivation and emotional motivation staff.

Conclusion: On the first sight it had lot of challenges because of pressure from all stakeholders, more particularly the decisive stakeholder viz shareholder, who has significant weightage in AGM. Secondly the sales were also decreasing and newcomers in market doing better despite of our long-standing Goodwill in the market.

CEO turn around the Organization by his own AI knowledge, skills, wisdom by taking all in and out of box evils and angels.

He has cut-to-size all the unwarranted from the Organization and made the It a profit making with surplus fund.

Teaching Note

Rightsizing Organization by Layoff – Impact of AI, Low performers, Employees with duplicate roles, Impact of employees in good or bad books. Case synopsis

The lofty market plan, very ambitious sales targets, use of AI technology and the growth plan of the Organization made the HR

department to recruit staff in all the departments. But due to the natural calamities, external market forces like low demand in the market, heavy competition, price war etc., made most of the Organization unstable and questionable of prosperity as planned. Thus, ultimately ended with fiasco. ▪ The uproar of AGM viz share price not increasing and no handsome dividend paid, no increase in book value of shares etc., took place in the Management of the Organization. The Management on deliberation with important stakeholders decided to replace the present CEO with right kind of person, who can set right the issue and bring back the Organization to its original glory.

Accordingly, a hunt was over they found a right person, as per the vision of the Management he turnaround the Organization by taking very harsh but fruitful result-oriented actions. His diagnoses on above figure I and II and all kind of motivation really made wonders and registered desired results.

Key words: positive, negative, emotional motivation, pricy ex gratia, lien, right person for right job, vibrant marketing strategies, AI technology.

Target Learning group:

Business owners, management graduating students, business strategic planner, practicing business house, business tycoons, showroom owners, dealers, vendors, startups, entrepreneurs, department heads etc.,

Learning and Teaching Objective and key issues

a. To upgrade technology tune with the market requirements.
b. To understand the sentiment of market, stakeholders and employees.
c. To assess the challenges and overcome with capability, wisdom.
d. To analyse the present competitors and staff required.

Teaching Strategy:

For students: Break the classroom into the peer groups of 4 / 6 each and open the case by discussion, I mean by way of introduction. Further learning group may be provided with board plan / mind mapping hints.

Why the stakeholders more particularly shareholders annoyed in AGM on the performance of the Organization and more on the administration of present CEO. After discussion it must be followed by the presentation with their viewpoints.

Questions for Discussion:

1) Exhibit learning abilities pertain to the case insight.
2) The pulses of AGM were call for the turnaround of an organization. Discuss the power of stakeholders?
3) Critically analyse the impact of various motivation as discussed in this case.

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Teaching Experience:

This case tested by the learnt professor of management stream and among the management students (MBA, BBA). It was keenly observed that, student could understand the insight of learning, interest, dedication, process of right person at right place in the case.

And the new CEO approach on the issue and how diligently he handled and turnaround the Organization, making happy layoff employees, shareholders, and employees who have been retained.

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Artificial Intelligence in E-Commerce Fraud Identification and Prevention: Strategies, Challenges, and Emerging Trends

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Abstract

Artificial Intelligence has shown notable potential in strengthening fraud identification and prevention in e-commerce. By machine intelligence, transaction data and deep learning we can conclude that traditional methods often fail to identify fraud.

Despite these technologies there are still challenges faced by the customers in Bias due to customer data has been used which is creating a step back for customers to enter the e-commerce platforms because of privacy concerns. The inclusion of trending technologies like blockchain and biometric authentication providing prevention of fraud which improves the security of every transaction.

Looking forward, Artificial Intelligence will continue to create an innovation in fraud identification and implementation of their technology will be helpful for business and customers.

Keywords: *Artificial Intelligence, Fraud Identification, Fraud Prevention, E-Commerce, Emerging Trends.*

Introduction:

Artificial Intelligence has shown notable potential in strengthening fraud identification and prevention in e-commerce. By machine intelligence, transaction data and deep learning we can conclude that traditional methods often fail to identify fraud.

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Looking forward, Artificial Intelligence will continue to create an innovation in fraud identification and implementation of their technology will be helpful for business and customers.

Objectives:

1. To evaluate Artificial Intelligence

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importance for promoting e-commerce fraud
2. To find the problems with accomplishing AI in fraud identification
3. To access the trends in Artificial Intelligence technology for E-Commerce

Literature Review:

Simple Language Processing (SLP): SLP techniques have rapidly been applied to identify raw text data, such as emails, customer reviews and chat logs. These methods are useful in determining potential signs of fraud, including scam attempts or other manipulative tactics.

Even with these developments, Artificial Intelligence based fraud identification is not without challenges. The collection and analysis of large amounts of data enhance significant privacy difficulties. Algorithmic bias can also result in false positives or false negatives, featuring the need for clear and accountable AI systems. Further as fraud methods continue to develop, detection systems must steadily adapt, creating an proceeding challenge for businesses seeking to maintain secure online transactions.

Research Gap and Limitations:

Major research on AI's role in fraud identification, several gaps continue in the literature:

1. **Failing of Real-World Case Studies:** Most of the research focuses on theoretical background not on real world case studies, this creates a gap in literature.
2. **Bias and Integrity in AI Algorithms:** There is a Bias decision making because they are dependent on skewed data so there is limited integrity in data.
3. **Transformation to developing Fraud Tactics:** Due to increase in fraud techniques increasing there must be more exploration in this domain.
4. **Association with other technologies:** AI is combined with other developing technologies, so there is limited exploration.

The limitations of this study incorporate the incapability to examine Artificial Intelligence systems in recent production environments, which may lead to differences between the theoretical validity of AI models and their realistic application. The research sample is limited to 100 transactions in Hyderabad.

Data Analysis and Interpretation:

Research analysis is done with appropriate tables and diagrams using SPSS Crosstabs.

The data is collected from both Primary and Secondary sources. Convenience sampling technique is used to collect primary data with structured questionnaires with a sample size of 100 transactions in Hyderabad focusing on fraud identification and prevention.

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Secondary data is collected from different journals, websites and published resources.

I. Identification of Fraudulent Patterns

The research study analyses 100 transactions, each named as either **legitimate or fraudulent**, through statistical models such as **Decision Trees**, **Random Forests**, and **Neural Networks**. These models will be skilled to find fraudulent patterns based on transaction data, including transaction amount, user behaviour and location.

Metrics Used:

- **Accuracy:** Which represents the proportion of correctly classified into legitimate and fraudulent.
- **Precision:** It measures how many transactions are correctly identified as fraudulent transactions which were actually fraudulent.
- **Recall:** It gives the picture of how many actual fraudulent cases were correctly detected as fraudulent.

From the given sample of 100 transactions we can calculate Accuracy, Precision and Recall through models for each algorithm.

Data Analysis:

The findings of these three models on a set of data of 100 transactions from the e-commerce platforms in Hyderabad, which involves both legitimate and fraudulent transactions. The performance metrics Accuracy, Precision, and Recall is used for **Decision Trees**, **Random Forests**, and **Neural Networks** results in:

Algorithm	Accuracy (%)	Precision (%)	Recall (%)
Decision Tree	82.0	58.5	70.0
Random Forest	85.0	62.0	73.0
Neural Network	88.5	65.5	82.0

Graph 1: Proportion of Accuracy, Precision, and Recall for distinct Algorithms

This bar chart explains the performance of **Decision Trees**, **Random Forests**, and **Neural Networks** for the set of data of 100 transactions in Hyderabad:

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```
sql

+-------------------------------------------------+
|  Fraud Detection Algorithms Comparison          |
|-------------------------------------------------/
| Algorithm      | Accuracy | Precision | Recall   |
|-------------------------------------------------/
| Decision Tree  | 82.0%    | 58.5%     | 70.0%    |
| Random Forest  | 85.0%    | 62.0%     | 73.0%    |
| Neural Network | 88.5%    | 65.5%     | 82.0%    |
+-------------------------------------------------+
```

Bar chart representing these standards

1. The results show Neural Networks performing the strongest across all metrics in the sample- accuracy, precision and recall. The outcome suggests that deep learning models can detect fraudulent transactions compared to traditional models in Hyderabad e-commerce.
2. Random Forests also performed better than Decision Trees, with a visible progress in both precision and recall values indicating that ensemble learning methods help in providing more reliability for fraud detection with a 100 sample transactions.
3. Comparable to both Decision Trees shows the lowest performance among other models, but there is still a reasonable level of detection, in particular in terms of accuracy.

II. Bias Analysis

This **bias analysis** will be focusing on demographic parameters specific to the sample size of 100 transactions. The analysis focuses on factors such as age, gender and location within Hyderabad which impact the influence of decisions as fraudulent.

Demographic Group:

The demographic information of customers involved in the 100 transactions will be examined to evaluate whether certain groups are more likely to be marked for fraud.

1. Age: 18-24, 25-34, and 35-44 and above
2. Gender: Male and Female.
3. Location: Different areas within Hyderabad (e.g., Hitech City, Banjara Hills, etc.).

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Analysis:

False Positive Rate (FPR) indicates how many legitimate transactions that were incorrectly marked as fraudulent within a specific demographic group.

False Negative Rate (FNR) represents how many actual fraudulent cases were missed within each demographic group.

Data Analysis:

The purpose of this analysis is to see whether demographic factors such as age, gender, and location influence the accuracy of fraud detection outcomes. These biases may result in certain demographic groups being unfairly marked or omitted by the fraud detection.

In this study, we will test **False Positive Rate (FPR)** and **False Negative Rate (FNR)** from e-commerce platforms in Hyderabad among different demographic variables based on a sample of 100 financial transactions which includes variables age, gender and location.

Demographic Group	Fraudulent Transactions (%)	Flagged Fraudulent (%)	FPR (%)	FNR (%)
Age: 18-24	30%	40%	20%	10%
Age: 25-34	25%	30%	18%	12%
Age: 35-44 and above	15%	28%	14%	13%
Gender: Male	40%	50%	25%	20%
Gender: Female	60%	50%	10%	10%

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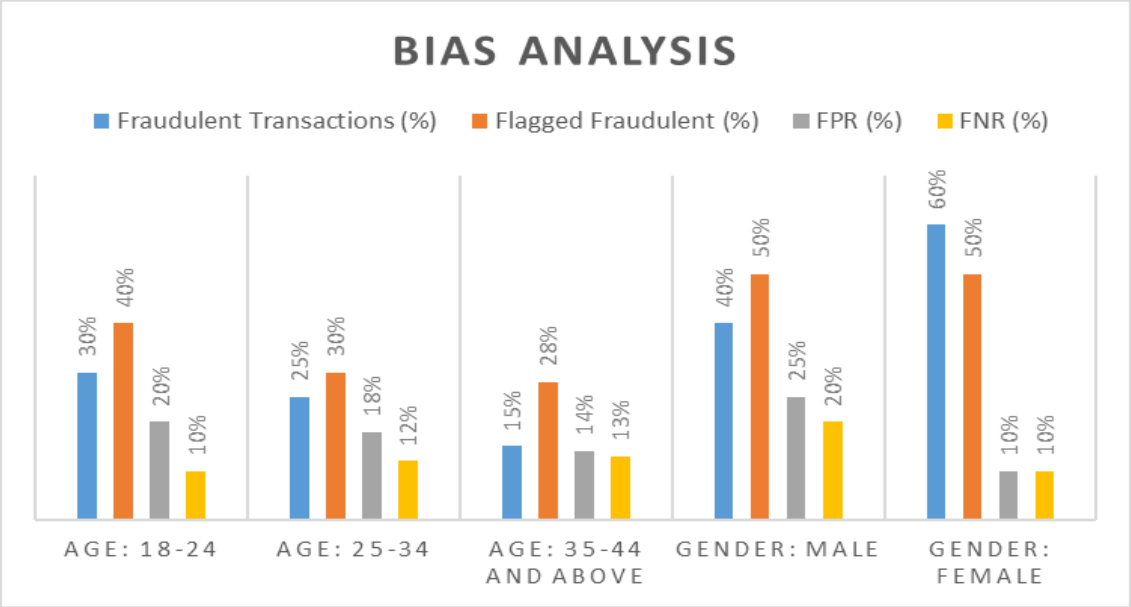

This graph visualizes the Bias analysis showing the percentages of FPR & FNR based on variables age, gender and location.

Key Observations:

1. From the above graph we can understand that there is a higher False Positive Rate for males and the 18-24 Age group compared to other age groups. From this we can understand that fraud detection has been marked more legitimate transactions as fraudulent which leads to unnecessary customer dissatisfaction
2. The analysis depicts that there is a higher False Negative Rate for the age group of 35-44 and above. This indicates that there are fraudulent transactions in this age group which is creating a gap in fraud prevention, this leads to older users being detected as fraudulent.

III. Emerging trends in AI for Fraud Identification:

The research will also explore how Artificial Intelligence can be integrated with other trending technologies like blockchain and biometric authentication in fraud identification.

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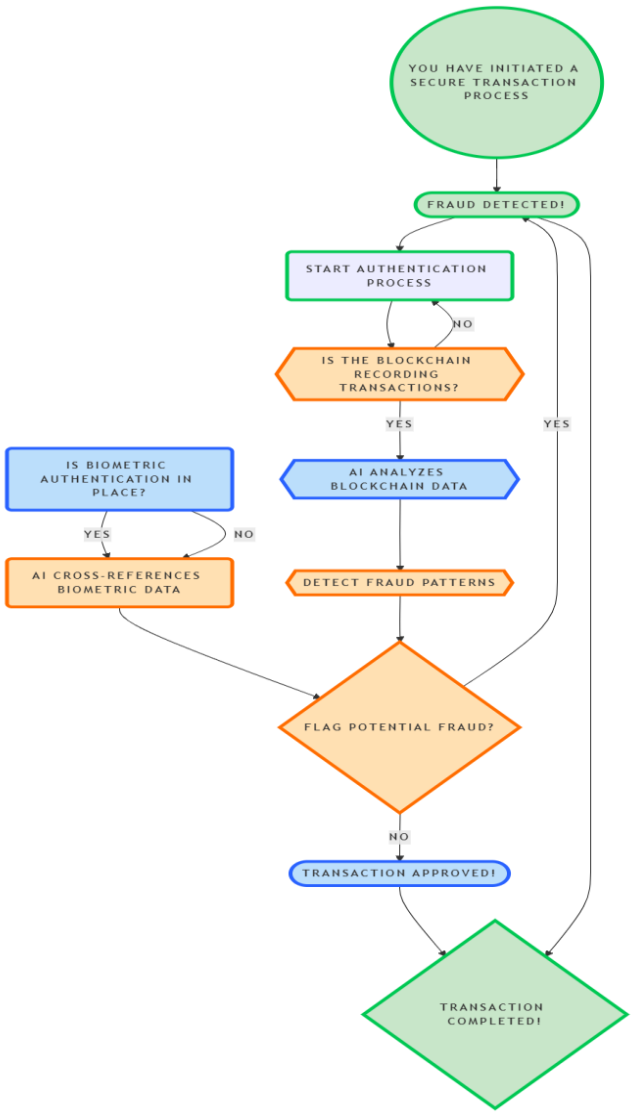

Key Observations:

The integration of these technologies in Artificial Intelligence with respect to blockchain and biometric explains fraud identification systems. Blockchain can track the history of transactions with the help of AI and provide a clear view for audit and provides ideal protection to the users in e-commerce platforms. Biometric authentication identifies the verification of the users which helps in prevention of frauds in every transaction which reduces the risk of fraud before every purchase.

Findings:

1. Neural Networks perform the strongest across all metrics in the sample- accuracy, precision and recall.
2. Random Forests also performed better than Decision Trees, with a visible progress in both precision and recall values indicating that ensemble learning

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methods help in providing more reliability for fraud detection with a 100 sample transactions.

3. Comparable to both Decision Trees shows the lowest performance among other models, but there is still a reasonable level of detection, in particular in terms of accuracy.
4. From Bias analysis we can understand that there is a higher False Positive Rate for males and the 18-24 Age group compared to other age groups. The analysis depicts that there is a higher False Negative Rate for the age group of 35-44 and above.
5. Blockchain can track the history of transactions with the help of AI and provide a clear view for audit and provides ideal protection to the users in e-commerce platforms.
6. Biometric authentication identifies the verification of the users which helps in prevention of frauds in every transaction which reduces the risk of fraud before every purchase.

Conclusion:

Artificial Intelligence has shown notable potential in strengthening fraud identification and prevention in e-commerce. By machine intelligence, transaction data and deep learning we can conclude that traditional methods often fail to identify fraud.

Despite these technologies there are still challenges faced by the customers in Bias due to customer data has been used which is creating a step back for customers to enter the e-commerce platforms because of privacy concerns. The inclusion of trending technologies like blockchain and biometric authentication; prevention of fraud which improves the security of every transaction.

Looking forward, Artificial Intelligence will continue to create an innovation in fraud identification and implementation of their technology will be helpful for business and customers.

Recommendations:

1. E-commerce platforms should regularly update system algorithms which ensure fraud detection remains accurate over time.
2. Guidelines should be developed to make fraud detection tools to protect the data of customers as per privacy laws.
3. Businesses should integrate both blockchain and biometric authentication to strengthen the security for large value transactions.

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Strategies for Reducing Human Bias in Recruitment and Selection through the Use of Artificial Intelligence

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Abstract

For any organization to meet its strategic goals, it is imperative have skilled human resources available at the right time in an efficient and cost-effective way. Efficient Recruitment and Selection processes are central to organizational effectiveness but remain vulnerable to implicit and explicit human biases. Human biases impact decision-making in recruitment and selection, thus limiting workforce diversity and the quality of hiring. This paper incorporates current research on strategies that use AI to reduce human bias in recruitment and selection based on social-cognitive theories of bias and the emerging literature on algorithmic fairness, AI-driven processes, and tools. This study identifies the role played by AI-enabled tools—such as anonymized résumé screening, natural-language-processing (NLP) job-advertising analyzers, and structured-interview platforms— in minimizing human bias in the hiring process. The findings of this study point out that Artificial Intelligence tools developed with right training data set and with adequate governance mechanism, will improve the consistency, impartialness and inclusiveness in the hiring process.

***Keywords**: Artificial Intelligence, Recruitment, Bias Reduction, Algorithmic Fairness, Human Resource Management.*

Introduction

Within the HR function, recruitment and selection are among the most important activities that have a direct impact on the composition of the workforce, culture, and business results of the organization. In recruitment, there is always a possibility of bias while making hiring decisions, right from sourcing the resumes, advertising for a job, interviewing, and selecting a candidate. It is now established from various studies have established that hiring managers are prone to affinity bias, thus favoring candidates with similar backgrounds and traits that are similar to their own (Rivera, 2020). Other issues, such as making biased decisions due to confirmation bias and the halo or horn effect, can further impact their selections

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(Kahneman, 2011). These new-age recruitment and selection tools use machine learning, natural language processing (NLP) technologies, unbiased résumé-screening algorithms, predetermined questionnaires crafted to reduce bias, and video-interview analyzers, which are now improving objectivity and efficiency in recruitment and selection processes (Upadhyay & Khandelwal, 2022). Human Resource professionals are now advocating that these AI tools remove demographic identifiers, uses consistent criteria thus helping in better matching of skills in hiring. At the same time, many critics have cautioned that AI tools trained on biased data or poorly designed algorithms can still reproduce historical discrimination if not designed well (Raghavan et al., 2020).

This paper examines strategies through which AI can reduce human bias in recruitment and selection. It asks:

1. What forms of bias are most prevalent in Recruitment and Selection processes?
2. How can AI technologies mitigate such biases?
3. What governance frameworks are required to ensure fairness and accountability?

The discussion proceeds as follows. The Theoretical Background section explores the psychological and algorithmic theories of bias and fairness. The Research Methodology outlines the secondary research design used to collate and interpret recent studies. The Analysis section talks about the recent changes in the HR domain for using safeguards while using AI tools. The discussion section lists the major findings on the strategies adopted by organization to reduce bias in AI tools used for hiring. Key findings and conclusion provide outcome of the study. In conclusion, the author has given recommendation on using a strong ethics and governance framework for using AI tools in recruitment.

Theoretical Background

1. Understanding Human Bias in Recruitment

All human beings are influenced by their past experiences which leads to biases that can affect individual decision-making and judgment. In HR of an organization, these individual biases impact day to day decision in recruitment, performance management and talent management processes. The recruitment teams and hiring managers should be aware of such biases to improve the fairness and consistency to improve quality of hiring. The biases in human judgement are often due to individual tendencies to take cognitive shortcuts known as heuristics. These are adopted by individuals to make things easier while taking decision which are complex in nature. These shortcuts give rise to systematic errors while making a judgement. (Tversky & Kahneman, 1974). In recruitment, these errors occur due to:

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Similarity or Affinity Bias	Similarity bias is the bias due to hiring managers or recruitment team members often choose to select certain candidates who has similar personal traits or experiences.
Stereotype Bias	These biases arise due to the past experience and cultural beliefs which generalized a candidate basis their gender, race or age when determining their competence (Derous & Ryan, 2019).
Confirmation Bias	Every individual has some pre-conceived notions. These individuals always try to seek evidence which are confirming their beliefs or notions.
Halo/Horns Effect	Some Individuals are guided by favoring a particular trait which they have seen or heard about an individual and make certain assumptions while taking hiring decisions.
Name and Appearance Bias	In this type the hiring managers favors applicants with names or photographs associated with dominant social groups (Bertrand & Mullainathan, 2004).

Organizational psychologists have long recommended structured selection methods, including standardized interviews and scoring rubrics, to counter such biases (Campion et al., 1997).

2. Algorithmic Bias and Fairness

Algorithmic bias occurs when automated systems generate systematically different outcomes for different demographic groups. For example, if the algorithm was created by a certain manager to assess only a certain characteristic (for example, having knowledge of data analytics), which he deemed to be the most important trait to perform a job in his experience over other important attributes (for example, the ability to negotiate).

To address such issues, the computer science literature has proposed several fairness metrics, including *demographic parity*, *equal opportunity*, and *predictive parity*, to quantify bias in algorithmic outputs (Barocas et al., 2019). Each of these metrics provides a different conception of fairness, and one may overshadow the another.

3. Social-Cognitive and Organizational Theories of Bias

Humam being differs from each other due to their ability to process information and judge others which is a focus of Social-cognitive theories. These theories give out details on how the mental makeup, cognitive shortcuts

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and stereotypes, shapes perceptions and decision making. on the other hand, Organizational theories, analyses how organization culture, policies and structures create systematic biases in the workplace. Within organizations, social identity theory provides evidences that individuals often group themselves and others into in-groups and out-groups, thus influencing attitudes and evaluations (Tajfel & Turner, 1986). The new age AI tools are used to reduce these biases. However, when algorithms learn from human-labeled data, they may adopt the same in-group preferences at scale, producing what sociologists call the "*algorithmic reproduction of inequality*" (Eubanks, 2018). Socio-technical systems theory states that technology and human beings are interdependent; AI systems imitate organizational norms, incentives and governance structures (Baxter & Sommerville, 2011).

4. AI Applications in Recruitment and Selection

AI has penetrated all stages of the Recruitment and Selection process. Organizations are increasingly becoming dependent on AI tools to reduce costs, automate processes, and reduce human intervention in repetitive tasks.

1. Job Analysis and Advertising: Natural language processing (NLP) tools (e.g., Textio) analyze job descriptions to detect gender-coded or exclusionary language, suggesting inclusive alternatives (Gaucher et al., 2011).
2. Sourcing and Screening: Machine learning algorithms rank candidates based on their skills, experience, and performance predictions. Blind screening tools automatically redact names, photos, and demographic indicators.
3. Assessment and Interviews: AI-based platforms score video or text responses using consistent rubrics, and chatbots administer structured behavioral questions. The AI tools use various assessment tools and interpret results to check if candidates have relevant attributes as per job descriptions
4. Decision Support: Predictive analytics aggregate scores and simulate outcomes under different weighting scenarios to aid in the final selection.

5. Ethical and Legal Frameworks

It is important to note that recruitment related matters are governed by various legal provisions and hence use of AI tools in hiring needs careful legal review to protect from legal risk from employment laws and human rights obligations. Many countries like the United States and European Union has formulated guidelines on using AI tools due to the risk associated with them by not having transparency, data quality documentation, and human oversight. Many Organizations are

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making such guidelines for internal responsible use of AI tools through review of algorithms, monitor outputs of AI tools and communicate with these with employees and candidates (Jobin et al., 2019).

Research Methodology

1. Research Design

While undertaking this study the author has taken inputs from peer-reviewed journals, internet-based research and reports, and regulatory publications related to use of AI tools in recruitment. This study is based on a secondary qualitative research design, literature review to explore and evaluate how AI tools are used to reduce bias in hiring. The methodology is in line with the guidelines proposed by Snyder (2019) for conducting thorough secondary reviews in management research.

2.

3. Data Collection and Inclusion Criteria

Searches were conducted in various online web-based databases such as Scopus, Web of Science, and Google Scholar using the keywords: *AI recruitment bias*, *algorithmic fairness HRM*, *AI hiring discrimination*, and *ethical AI selection*. The inclusion criteria for selecting the studies were articles and journals published between 2020 and 2025 and Discuss AI-based recruitment or selection processes with an explicit focus on fairness, bias, or ethics. These studies Present empirical data or conceptual frameworks relevant to the subject.

4.

5. Data Analysis and Synthesis

Thematic analysis was performed by tabulating the extracted findings into four categories: (a) types of bias addressed, (b) AI mechanism employed, (c) evidence of bias mitigation, and (d) limitations or risks identified. To ensure credibility, triangulation across data sources and theoretical perspectives (organizational psychology, computer science, ethics, and law) was conducted.

Table 1 Summary of Selected Studies on AI and Bias Reduction in Recruitment (2020 – 2025)

Author(s) & Year	Context / Method	Focus	Key Findings
Upadhyay & Khandelwal (2022)	Conceptual / HR tech review	AI applications in HRM	AI can reduce human error via automation but risks amplifying bias without data audits.
Raghavan et al. (2020)	Empirical analysis of résumé algorithms	Bias in automated hiring	Historic data bias reproduces gender inequality; need for transparency.

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Soleimani et al. (2025)	Qualitative interviews (AI developers, HR)	Fair design of hiring algorithms	Advocates iterative development, dataset management, and retraining to minimize bias.
Derous & Ryan (2019)	Experimental psychology	Bias in résumé screening	Demonstrates name/ethnicity bias; supports anonymization as mitigation.
Wen et al. (2025)	Benchmark dataset (FAIRE)	Cross-model bias evaluation	Quantifies racial/gender bias variation across AI models; recommends auditing.
Jobin et al. (2019)	Ethics framework review	AI governance	Identifies transparency and accountability as universal ethical principles.
Rivera (2020)	Qualitative HR study	Affinity bias in hiring	Highlights persistence of "similar-to-me" effects despite formal structures.

Note. Sources selected from 2020–2025 to reflect contemporary research emphasis on fairness, transparency, and algorithmic accountability.

Analysis and Discussion

1. Patterns of Bias Addressed by AI tools

The literature confirms that AI systems are primarily used to target procedural biases—those arising from inconsistent evaluation criteria (depending on the limitations and competence o0f hiring managers) or exposure to demographic identifiers (which gives rise to unconscious or conscious bias). AI Tools that anonymize résumés or apply structured scoring can meaningfully reduce name and appearance bias (Derous & Ryan, 2019). NLP-based job-ad optimization reduces linguistic bias, while algorithmic decision support minimizes confirmation bias by standardizing scoring. Raghavan et al. (2020) showed that even after gender labels were removed, male-coded employment histories still produced higher algorithmic rankings. This may arise due to the lesser gender diversity prevailing in certain conventional job roles.

Another way is to implement strong processes for the recruitment and selection team to carefully handle resumes while using AI tools for ranking resumes, creating job advertisements to mitigate demographic biases, and ensuring that such tools are regularly audited for consistency and fairness.

2. Strategies for Bias Reduction across Hiring Stages

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From the literature review and its analysis, the following are a few examples of strategies used to reduce biases in recruitment and selection.

Table 2 Overview of AI Tools and Bias-Mitigation Strategies across Recruitment Stages

Recruitment Stage	AI Tool Example	Bias Addressed	Mitigation Strategy	Empirical / Source
Job Advertising	Textio (NLP language tool)	Gendered wording	Detects exclusionary terms; recommends inclusive phrasing	Gaucher et al. (2011)
Résumé Screening	HireVue, Pymetrics (skill-based matchers)	Name / appearance bias	Anonymized profiles; competency weighting	Upadhyay & Khandelwal (2022)
Candidate Assessment	AI-based gamified tests	Confirmation bias	Standardized scoring; focus on task data not impressions	Wen et al. (2025)
Interviews	Structured-interview bots	Halo / affinity bias	Same questions for all; objective rubric scoring	Campion et al. (1997)
Decision Support	Predictive analytics dashboards	Human inconsistency	Aggregates data; enforces parity thresholds	Soleimani et al. (2025)

These strategies collectively demonstrate that fairness gains can be achieved when algorithms are transparent, validated, and continuously monitored.

3. Standardization and Anonymization as Part of a Broader Strategy

Meta-analytic evidence supports the effectiveness of structured interviews and standardized testing in improving predictive validity and reducing subgroup differences (Campion et al., 1997; Schmidt et al., 2016). In digital contexts, anonymization consistently decreases discrimination against female and minority applicants (Derous and Ryan, 2019). To effectively reduce discrimination, organizations should consider anonymization as part of a broader strategy that includes diverse hiring panels, standardized evaluation criteria, and ongoing bias training for recruiters and hiring managers to reduce discrimination.

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Wen et al. (2025) found that there are quantifiable reductions in bias once fairness constraints were applied to machine-learning tools. However, studies have also exposed that some bias can re-enter during model updates.

4. Governance and Human Oversight

It is important to have governance in form of human oversight in developing AI tools for hiring The Human-in-the-Loop (HITL) model remains a major defense for avoiding biases in AI tools due to poor training data and inbuilt biases leading to defective outcomes. Human reviewers must understand AI outputs, validate the context, and document decisions (Shneiderman, 2020). Transparency in decision-making processes is vital to prove that the tools used are fair and just, which reinforce candidates' perceptions of fairness about decision-making process (Gilliland, 1993). This concept is particularly relevant in the context of AI-driven recruitment and selection. Organizations should communicate use of AI tools and provide appeal mechanism to enhance applicant's trust (Bogen & Rieke, 2018).

5. Benefits and Organizational Outcomes

AI tools used in recruitment and selection offer multiple advantages to organizations if used properly. Some benefits are

1. Improved efficiency - AI tools can process large number of applications, resumes, and candidate data and help HR teams to reduce the time-to-hire.
2. Reduced bias - AI tools minimize human intervention thus it potentially minimizing unconscious human biases in the recruitment process.
3. Better candidate experience - Chatbots powered by AI tools offer automated scheduling, quick replies and enhance communication with candidates.
4. Consistency in Evaluation - AI tools are capable of examining past hiring data to identify trends and forecast a candidate's success in particular positions. Consistent evaluation helps in minimizing subjectivity in the hiring process.
5. Cost savings - Implementing automation for routine tasks in the hiring process can result in considerable cost savings.
6. Improved quality of hires - By using predictive analytics, AI can aid in identifying candidates who are more likely to succeed and remain with the organization for a longer duration.
7. Improve Diversity in hiring - The job descriptions are prepared to include appropriate language, exclude gender related terms etc. to attracts wider pool of applicants.
8. Better Compliance to legal standards – With increasing need of documentation for any audits, these AI tools are useful to keep audit trails to support legal requirement of the recruitment process.

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With the increasing research in AI tools used for hiring process it is now evident that such tools improve overall diversity in the hiring and proves to have better candidate satisfaction (Upadhyay & Khandelwal, 2022).

6. Limitations and Risks

The use of AI tools is increasing in hiring process but over dependency on these with complicated algorithms will lead to poor undermine accountability and will remove the human element in candidate experience (Raghavan et al., 2020). There is limitation in use of AI tools due to issues of algorithmic drift, not having transparency, and data privacy concerns (like those in video interview analytics). In addition to these limitations there are risks in interpretations of fairness, poor implementation which may have impact on achieving demographic equality and accuracy. (Barocas et al., 2019). Thus, organizations must be careful while deploying such tools in recruitment and selection process to maintain balance between technical aspects to ensure fairness and being relevant.

Findings from the Study

The author finds that AI tools used in hiring will surely help to reduce various human biases in the hiring process. These tools will eliminate inconsistent human judgment, demographic identifiers and will help organizations to improve consistency in the hiring process. To effectively reduce bias, several strategies can be employed by organizations namely : -

a) The AI tools should be used to anonymized the candidate demographic information and focus on skills to reduce biases related to names and appearances.
b) Organizations should train managers to use structured interviews process and AI tools-based evaluations to avoid any halo/ horn effect and confirmation biases.
c) The recruitment teams should train the AI tools to add inclusive language to remove gender terms etc. in the job descriptions to attract wider applicant pools.
d) The Human resource department should conduct regular audits and supervise the output of the AI tools to ensure fairness.

Recommendations

The author after conducting this study have come up with following recommendations for any organization using AI tools in recruitment and selection: -

1. The originations should analyze training data used by AI tools to avoid any potential biases. The recruitment teams should conduct design and testing with diverse candidate groups to identify any discrepancies in the outputs of AI tools.
2. The HR function should train recruitment teams and hiring managers to use AI tools and encourage them to review the AI tools

recommendation with careful human oversight throughout the hiring process.

3. The organizations should implement strong governance process while using AI tools like regular audits, validating the algorithms over time periods etc.
4. The recruitment teams should give out clear guidelines for the use of AI tools, inform candidates about the use of AI tools in the recruitment process.
5. Organizations must seek external audits and certifications to evaluate AI systems for fairness and pursue relevant certifications for ethical AI use in recruitment processes.

Conclusion

It is evident from the study that organizations using Artificial Intelligence (AI) tools for recruitment and selections can improve the fairness and consistency of the hiring process. If these AI tools are used effectively with human supervision and strong governance, they will help in reducing human bias in recruitment processes. The Artificial Intelligence (AI) tools can significantly improve objectivity by anonymization of demographical data and provide a way to have structured evaluation of candidates while hiring. However, the success of AI tools depends on the robust design, careful implementation and human governance. The organizations which uses these AI tools along human judgment instead as a substitute will surely benefit form its use to create an equitable and inclusive workplace.

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Organizational Restructuring and Proactive Governance: A Multi-Stakeholder Analysis of Violence Prevention Strategies in Hospital Settings

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Abstract

The issue of violence against healthcare professionals is increasingly alarming in India, impacting both the welfare of the staff and the overall standard of healthcare services. Despite the implementation of laws aimed at tackling this issue, the rates of workplace violence continue to be alarmingly high. This research examines how organizational changes within hospitals and proactive governance can mitigate violence, considering the perspectives of doctors, patients, law enforcement, and medico-legal experts in Western Maharashtra. A descriptive cross-sectional study was carried out involving 558 participants through structured questionnaires. The data was analyzed using descriptive and comparative statistical techniques to assess the effectiveness of current strategies.

There are notable deficiencies in hospital security, communication, and support systems for staff. Strategies such as enhancing communication and implementing improved security measures were identified as particularly beneficial, yet many support and governance initiatives are still not fully operational. Hospitals require comprehensive, multi-stakeholder strategies to effectively prevent violence. It is crucial to merge enhanced security, clearer communication, and robust support systems. Continuous evaluation and collaboration are essential to ensure the safety of healthcare environments.

Keywords: *(Healthcare violence, organizational change, governance, workplace safety, India, hospital management)*

Introduction:

Violence against healthcare workers is a serious problem in India and around the world. In India, more than 75% of healthcare professionals have experienced some form of violence at work, often in the form of verbal abuse or even physical harm (Ghosh, 2018; Sharma et al., 2020). Although there are laws like the Maharashtra Medicare Service Persons and

Institutions Act, 2010, which aim to protect healthcare workers, enforcing these rules remains a challenge (Singh et al., 2021).

Workplace violence includes physical attacks, verbal threats, and psychological harm directed at medical staff. It is most common in places like emergency rooms and intensive care units, often involving patients' relatives or visitors. Such violence can lead to stress and burnout for healthcare workers, higher turnover rates, and poorer care for patients (Chatterjee & Choudhury, 2021).

Research Problem:

Despite having laws and hospital policies, violence against healthcare staff continues to rise in Indian hospitals. Existing strategies do not fully consider the perspectives of all stakeholders or address the deeper organizational issues that contribute to violence. There is also limited research on how changes within hospital organizations and proactive governance can help reduce violence.

Research Objectives:

1. To find out how common violence is against healthcare professionals, based on different stakeholder perspectives.
2. To evaluate the effectiveness of current organizational changes in preventing violence.
3. To examine proactive governance strategies used by hospitals.
4. To identify key factors influencing violence prevention, as seen by doctors, patients, policemen, and medico-legal experts.
5. To recommend evidence-based steps for a comprehensive violence prevention framework.

Research Methodology:

Study Design-

This study used a descriptive cross-sectional design, which means information was collected at one point in time from a variety of participants. Both quantitative (numbers and statistics) and qualitative (opinions and experiences) approaches were used to get a full picture of the situation.

Study Setting-

The study was carried out in various hospitals (both government and private) across Western Maharashtra, India, between January and March 2024.

Participants-

Participants included four main groups:

- **Doctors** working in hospital settings
- **Patients and their families** who had recently used hospital services
- **Policemen** who are often called to respond to hospital incidents

- **Medico-legal experts** involved in handling legal cases related to hospital violence

Sampling Method-

A purposive sampling technique was adopted. This means participants were chosen intentionally to ensure that each stakeholder group was fairly represented.

Sample Size-

A total of 558 people participated:

- Doctors: 145
- Patients/Families: 140
- Policemen: 138
- Medico-Legal Experts: 135

Data Collection Tools-

Data was collected using a structured questionnaire (see Appendix) during face-to-face interviews. The questionnaire included:

- Demographic questions (age, gender, experience)
- Questions about experiences with violence
- Ratings of existing security measures and organizational interventions
- Attitudinal questions using a 5-point Likert scale (from Strongly Disagree to Strongly Agree)
- Open-ended questions for additional suggestions

Data Analysis-

All data were analyzed using SPSS version 28.0. The following methods were used:

- **Descriptive statistics** to summarize data (like means and percentages)
- **Chi-square tests** and **ANOVA** to compare responses between groups
- Open-ended responses were grouped by common themes

Results:

I. Demographic Characteristics

Characteristic	**Doctors (n=145)**	**Patients (n=140)**	**Policemen (n=138)**	**Medico-Legal (n=135)**
Age (Mean ± SD)	34.2 ± 8.5	42.1 ± 12.3	38.7 ± 9.2	41.5 ± 10.1
Male (%)	68.3	55.7	82.6	74.8
Female (%)	31.7	44.3	17.4	25.2
Experience (Years)	8.6 ± 6.2	-	12.4 ± 7.8	15.2 ± 8.9

Interpretation:

This table shows that most participants in the professional categories are male, which reflects the current gender distribution in

these fields in India. Doctors tend to be younger, while policemen and medico-legal experts generally have more years of experience.

II. Violence Prevalence and Types

Violence Type	Doctors (%)	Patients (%)	Policemen (%)	Medico-Legal (%)	p-value
Verbal Abuse	89.7	67.1	85.5	78.5	<0.001
Physical Assault	34.5	28.6	52.2	41.5	<0.01
Threats	67.6	45.0	73.9	69.6	<0.001
Property Damage	23.4	15.7	34.8	28.9	<0.01
Psychological Harass.	56.6	38.6	45.7	52.6	<0.05

Interpretation:

Verbal abuse is the most common type of violence reported among all groups, especially by doctors and policemen. Physical assaults and threats are also worryingly high, particularly among those who respond to incidents. This highlights the urgent need for better prevention and response strategies in hospitals.

III. Security Infrastructure Assessment

Security Measure	Doctors	Patients	Policemen	Medico-Legal	Overall Mean	F-value*
Security Personnel Presence	2.34	2.89	2.12	2.45	2.45	8.23
CCTV Coverage	2.67	3.12	2.89	2.98	2.92	3.45
Access Control Systems	2.23	2.78	2.34	2.56	2.48	4.67
Emergency Alarm Systems	1.89	2.45	2.01	2.23	2.15	5.78

Incident Reporting	2.12	2.67	2.78	3.01	2.65	7.89

*p<0.05

Interpretation:

Security measures in hospitals are generally rated below average by all groups. Emergency alarm systems received particularly low scores, suggesting that hospitals are not fully prepared to respond quickly to violence. Doctors feel that security is insufficient.

IV. Effectiveness of Organizational Restructuring

Strategy	**Very Effective (%)**	**Effective (%)**	**Neutral (%)**	**Ineffective (%)**	**Very Ineffective (%)**
Staff Training Programs	18.3	34.6	28.7	15.2	3.2
Clear Protocols/SOPs	22.4	38.9	24.6	11.8	2.3
Dept. Restructuring	15.8	29.4	35.1	16.5	3.2
Communication Enhanc.	25.6	41.2	22.0	9.5	1.7
Security Integration	28.7	35.8	20.4	12.9	2.2

Interpretation:

Most participants agree that improving communication and integrating better security within the hospital are the most effective strategies for preventing violence. Clear protocols and training programs are also seen as helpful, but there is room for improvement in how these are implemented.

V. Proactive Governance Measures

Governance Measure	**Fully Impl. (%)**	**Partially Impl. (%)**	**Not Impl. (%)**	**Planned (%)**
Violence Prev. Policies	34.8	42.7	18.6	3.9

Risk Assessments	28.3	35.5	31.2	5.0
Stakeholder Committees	19.7	38.4	37.6	4.3
Performance Monitoring	25.4	40.1	29.9	4.6
Legal Compliance Audits	31.2	36.9	27.4	4.5
Staff Support Services	22.6	33.9	38.9	4.6

Interpretation:

Many governance measures, such as violence prevention policies and staff support services, are either not yet fully in place or only partially implemented in hospitals. Staff support services are particularly lacking, which is concerning since victims of violence need help to cope and recover.

VI. Stakeholder Priorities for Prevention

Strategy	Doctors	Patients	Policemen	Medico-Legal	Weighted Avg.
Enhanced Security	1	3	1	2	1.75
Training & Education	2	2	4	3	2.75
Improved Communication	3	1	3	1	2.00
Legal Framework	4	4	2	1	2.75
Physical Infrastructure	5	5	5	4	4.75
Counseling Services	6	6	6	5	5.75

Interpretation:

Doctors and policemen believe that increasing security is the highest priority, while patients think that improving communication is most important. This difference in opinions shows that hospitals need to balance security measures with

efforts to improve communication and relationships.

Discussion

This study gives a broad and easy-to-understand look at violence in Indian hospitals from the perspectives of those most involved—doctors, patients, policemen, and legal experts. The results show that violence, especially verbal abuse, is a common experience for everyone, with doctors and police facing the most risk. These findings are similar to other studies in India (Ghosh, 2018; Sharma et al., 2020), and highlight the need for urgent action.

Participants generally felt that hospitals lack good security systems, with low scores for emergency alarms and security personnel. This agrees with previous research that called for better physical security and monitoring in Indian hospitals (Kumar et al., 2022).

When it comes to organizational changes, most people felt that better communication and clear protocols were the best ways to prevent violence. However, many hospitals have not fully implemented important governance and support measures, such as staff counseling and risk assessments. This is worrying because staff who experience violence need proper support to continue working effectively (Chatterjee & Choudhury, 2021).

Different stakeholder groups had different priorities. Doctors and police wanted more security, while patients wanted better communication. This shows that one-size-fits-all solutions may not work, and hospitals should listen to all groups when planning improvements (Barman et al., 2020).

The study is limited to Western Maharashtra and is cross-sectional, which means it only shows a snapshot in time. It uses self-reporting, which may introduce bias, but it does provide valuable baseline data.

Policy implications are clear: hospitals should immediately improve security, provide regular training, and establish good communication systems. Longer-term efforts should include better staff support, legal reforms, and ongoing evaluation of violence prevention efforts.

Limitations:

1. The study only covers Western Maharashtra, so results may not apply to all regions.
2. Data was collected at one point in time, so we cannot see trends.
3. Responses are self-reported and may be biased.

4. Purposive sampling may not fully represent every group.
5. People may have different ideas about what counts as violence or effective prevention.

Scope:

This research provides important evidence for building better violence prevention frameworks in Indian hospitals. It can help:

- Policymakers develop effective laws and policies
- Hospitals design training and security programs
- Researchers track progress and improve prevention measures

Recommendations:

Immediate Steps-

- Increase the number and training of security staff
- Install more CCTV and emergency alarms
- Start regular, mandatory training for all staff on handling violence
- Set up clear communication channels between staff, patients, and families

Medium-Term-

- Develop policies that include input from all groups
- Offer counseling and support to staff affected by violence
- Use technology for real-time monitoring and alerts

Long-Term-

- Build a culture of safety and respect in hospitals
- Strengthen enforcement of legal protections
- Continue research to track which strategies are working best

Collaboration-

- Set up committees with representatives from all stakeholder groups
- Review prevention strategies regularly
- Involve the community to change attitudes toward healthcare workers

Conclusion:

This study shows that violence against healthcare professionals is still a major problem, even with existing laws and policies. Different groups have different needs and priorities. To truly prevent violence, hospitals must combine better security, improved communication, staff training, and support systems. Ongoing collaboration and regular assessment are essential. Only then can healthcare professionals work without fear and provide the best possible care to patients.

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Statistical Analysis of Sleeping Disorder

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ABSTRACT

Sleep disorders represent a significant public health concern, affecting millions globally, with implications for both physical and mental health. Statistically, the prevalence of sleep disorders has been increasing, prompting researchers to employ advanced statistical methodologies to understand their patterns, causes, and impacts. This study leverages various statistical techniques, including descriptive statistics, regression models, and machine learning algorithms, to explore the epidemiology of sleep disorders, identify potential risk factors, and predict outcomes for individuals affected. By analyzing large datasets, including demographic variables, health indicators, and lifestyle factors, this research aims to uncover significant correlations and causal relationships between sleep disturbances and various socio-economic, genetic, and environmental factors. The findings provide valuable insights into the design of targeted interventions, policies, and treatment approaches to mitigate the burden of sleep disorders across different populations.

Keywords*: Sleeping Disorder, mental health, advanced statistical methodologies, etc.*

INTRODUCTION

Sleep disorders are a group of conditions that affect the ability to sleep well on a regular basis. These disorders can lead to difficulties falling asleep, staying asleep, or getting restful sleep, ultimately impacting a person's physical and mental health. Some of the most common sleep disorders include insomnia, sleep apnea, restless leg syndrome, narcolepsy, and parasomnias (such as sleepwalking or night terrors).

Sleep is essential for overall health, as it plays a critical role in cognitive function, mood regulation, immune function, and physical health. When disrupted, sleep disorders can contribute to a variety of problems, such as increased stress, impaired memory, concentration issues, higher risk of chronic conditions (like heart disease and diabetes), and a reduced quality of life.

Understanding sleep disorders, their causes, symptoms, and available treatments is crucial for managing them effectively and ensuring healthy sleep habits. By addressing the root causes and seeking appropriate medical guidance, individuals can improve their sleep

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patterns and overall well-being.

Insomnia is a common sleep disorder. With insomnia, you may have trouble falling asleep, staying asleep, or getting good quality sleep.

This happens even if you have the time and the right environment to sleep well. Insomnia can get in the way of your daily activities and may make you feel sleepy during the day.

Short-term insomnia may be caused by stress or changes in your schedule or environment. It can last for a few days or weeks. Chronic (long-term) insomnia occurs 3 or more nights a week, lasts more than 3 months, and cannot be fully explained by another health problem. To diagnose insomnia, your healthcare provider may ask about your sleep habits and ask you to keep a sleep diary. Your provider may also recommend healthy lifestyle habits such as a regular sleep schedule, cognitive behavioral therapy for insomnia, and medicines to help you manage your insomnia.

Methodology

Graphical Representation

Initially, the study employs graphical analysis to visualize the data. Bar charts are used to illustrate the relationship between the frequency of sleep disorders and variables like stress level and BMI category. A pie chart is used to show the distribution of sleep disorders across different occupations

Insomnia can affect your memory and concentration. Chronic insomnia raises your risk of high blood pressure, coronary heart disease, diabetes, and cancer.

Literature Review

This project provides a statistical analysis of sleep disorders to identify influential factors and develop predictive models. The methodology includes graphical representation, Chi-square tests, logistic regression, and decision trees.

Key findings from the Chi-square tests show that sleep disorders are significantly **dependent on stress level and age** but independent of gender and BMI category. The logistic regression model, identified as the best predictive tool, found that **physical activity, BMI, and daily steps** are statistically significant predictors, achieving 69% accuracy.

Hypothesis Testing

The core of the analysis relies on the **Chi-square () test for independence**. This statistical test is used to determine whether a significant relationship exists between having a sleep disorder and various attributes, including:

- Stress Level
- BMI Category
- Sleep Duration
- Occupation

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- Age
- Gender

Predictive Modeling

To identify key predictors, the study develops two machine learning models:

1. **Logistic Regression**: Two separate logistic regression models are fitted. The models are compared using the Akaike Information Criterion (AIC) to identify the one with the better fit.
2. **Decision Tree**: A decision tree algorithm is implemented to classify individuals based on their likelihood of having a sleep disorder, and the model's accuracy is evaluated.

1: Chi-Square test

H_0 : Sleep Disorder is independent on Stress Level V/S

H_1 : Sleep Disorder is dependent on Stress Level.

Stress level	Sleep disorder
1	8
2	11
3	17
4	13
5	11
6	5
7	7
8	12
9	20
10	6

Test statistic under H0:

$$\chi^2 = \sum_{i=1}^{m}\sum_{j=1}^{n}\frac{(Oij-Eij)\text{^}2}{Eij} \sim \chi^2_{(m-1)(n-1)}$$

Decision:

χ^2_{cal} =18.247

df = 9

l. o. s. = 0.05 $\chi^2_{(9,0.05)}$ =16.919

$\chi^2_{cal} > \chi^2_{(9,0.05)}$ i.e. 18.247>16.919

Hence, we Reject H_0 at 5 % l. o. s.

Conclusion:- Sleep Disorder is dependent on Stress Level.

2: Chi-Square test

H_0 : Sleep Disorder is independent on BMI Category.

V/S

H_1 : Sleep Disorder is dependent on BMI Category.

BMI Catagory	Sleep disorder
0	34
1	28
2	25
3	23

Test statistic under H0:

$$\chi^2 = \sum_{i=1}^{m}\sum_{j=1}^{n}\frac{(Oij-Eij)\text{^}2}{Eij} \sim \chi^2_{(m-1)(n-1)}$$

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Decision:

χ^2_{cal} =4.4535

df = 3

l. o. s. = 0.05

$\chi^2_{(3,0.05)}$=7.815

$\chi^2_{cal} < \chi^2_{(3,0.05)}$ i.e.

4.4535<7.815

Hence, we Accept H_0 at 5 % l. o. s.

Conclusion:- Sleep Disorder is independent on BMI Category.

3: Chi-Square test

H_0 : Sleep Disorder is independent on Sleep duration.

V/S

H_1 : Sleep Disorder is dependent on Sleep duration.

Sleep Duration(hr)	**Sleep disorder**
4	12
5	16
6	10
7	6
8	7
9	15
10	21
11	16
12	6

Test statistic under H0:

$$\chi^2 = \sum_{i=1}^{m}\sum_{j=1}^{n}\frac{(Oij-Eij)^2}{Eij} \sim \chi^2_{(m-1)(n-1)}$$

Decision:

χ^2_{cal} = 12.18

df = 8

l. o. s. = 0.05 $\chi^2_{(8,0.05)}$ =15.5007

$\chi^2_{cal} < \chi^2_{(8,0.05)}$ i.e.

12.18<15.5007

Hence, we Accept H_0 at 5 % l. o. s.

Conclusion:- Sleep Disorder is independent on Sleep disorder.

4: Chi-Square test

H_0 : Sleep disorder is independent on age.

V/S

H_1 : Sleep disorder is dependent on age.

Age	**yes**	**no**	**total**
15-30	30	88	118
30-45	45	96	141
45-60	25	81	106
60-75	9	22	31
75-60	2	2	4
total	111	289	400

Test statistic under H0:

$$\chi^2 = \sum_{i=1}^{m}\sum_{j=1}^{n}\frac{(Oij-Eij)^2}{Eij} \sim \chi^2_{(m-1)(n-1)}$$

Decision:

χ^2_{cal} = 85.562

df = 4

l. o. s. = 0.05

$\chi^2_{(4,0.05)}$ = 9.499

$\chi^2_{cal} > \chi^2_{(4,0.05)}$

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i.e.85.5

62>9.499

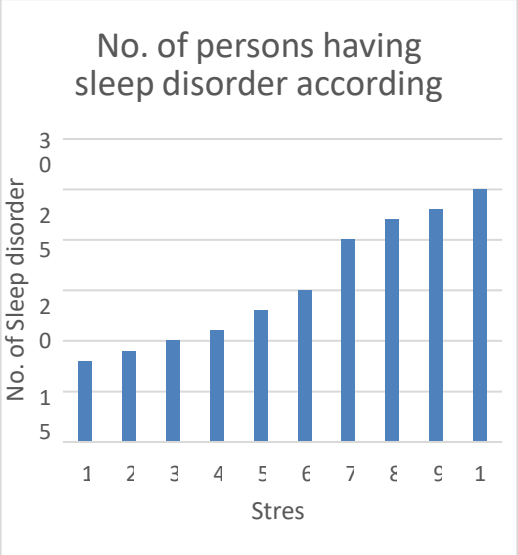
Hence, we Reject H_0 at 5 % l. o. s.

Conclusion:- Sleep disorder is dependent on age.

GRAPHICAL REPRESENTATION

1: No. of Persons Having sleep Disorder & stress level

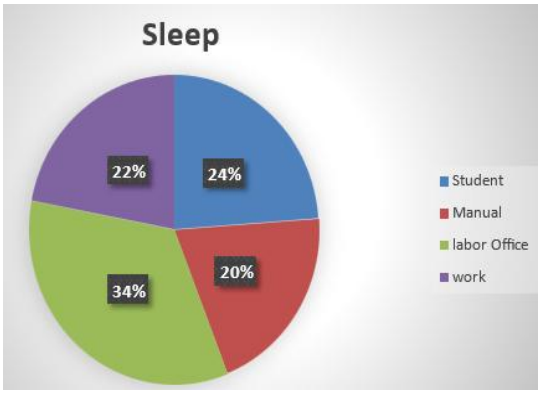
Bar diagram of sleep disorder



Conclusion :-From the above graph ,we can conclude that frequency of sleep disorder increase with stress level.

2: Occupation & No of sleep disorder

Pie Chart of occupation



Conclusion :- The pie chart represents the distribution of occupations among a group of individuals. The largest category is **office work**, followed by **students**, **retired individuals**, and **manual labor.**

LOGISTIC REGRESSION

Model 1= Sleep_disorder ~ Physical_Activity_Level + BMI _Category + Daily _steps Response variable: **Sleep disorder** Explanatory variable

1) **Physical activity level**
2) **BMI category**
3) **Daily steps**

Coefficient	D.F.	Deviance	AIC
Intercept		452.72	460.72
physical_ activity_ level	1	456.73	462.73
BMI _category	1	459.14	462.14
daily steps	1	460.93	466.93

Coefficients :

Interc ept	Physical_ activity_ level	BMI _categ ory	Daily steps
−0.650 8	−0.010222	−0.206 9	0.0000 5456

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Null deviance : 470.5 on 399 degrees of freedom

Residual deviance: 452.7 on 396 degrees of freedom

AIC: 460.7 (AIC – Akaike information criterian)

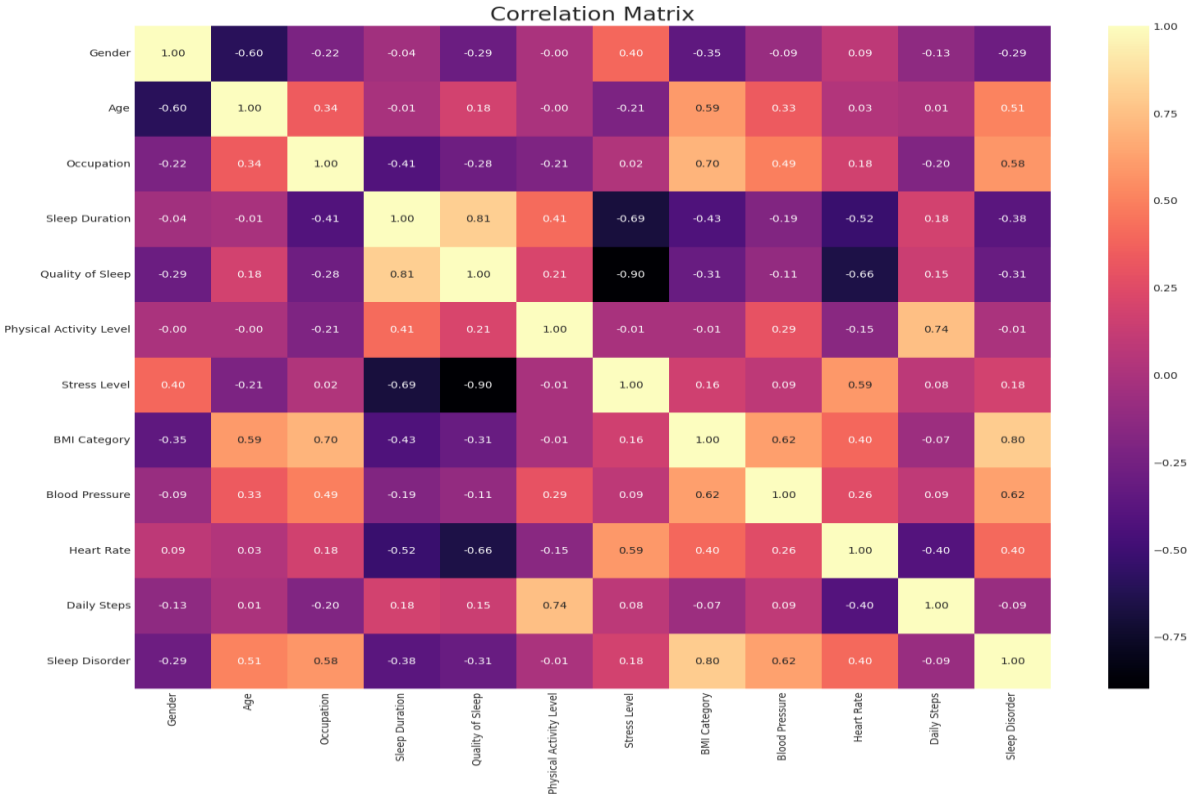
Conclusion: From the above table, we conclude that model is significant .

Confusion Matrix: [[68 2]

[29 1]]

Accuracy: 69.00%

Heatmap of Correlation Matrix



Conclusion:

The heat map provided highlights the correlation between various variables in the dataset. Here's a comprehensive conclusion:

1. **Strong Positive Correlations**: Certain variables exhibit high positive correlations, represented by darker shades. This suggests that as one variable increases, the other also increases.
2. **Strong Negative Correlations**: Some areas show strong negative correlations, where an increase in one variable leads to a decrease in another.
3. **Weak or No Correlation**: Lighter regions on the heat map indicate little to no relationship between specific variables.

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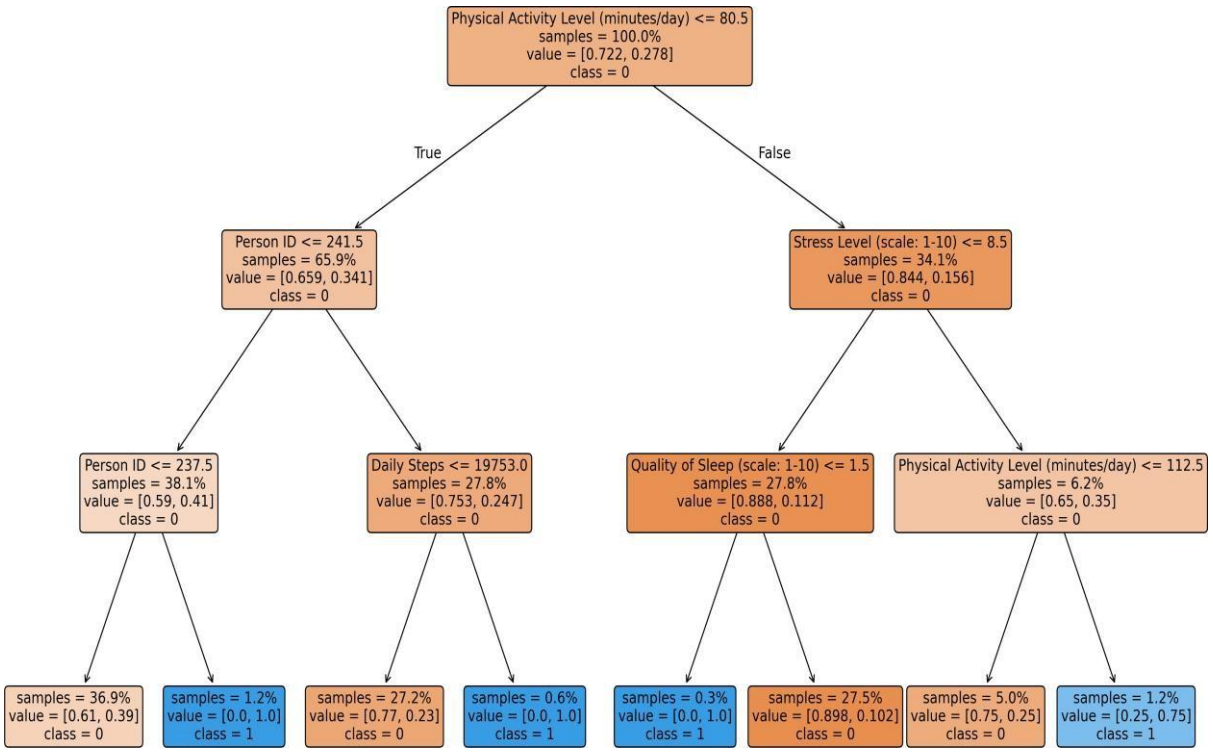
4. **Outliers and Anomalies**: The heat map also helps in identifying outliers or unexpected patterns in the data, which can be further investigated for anomalies.
5. **Key Variable Relationships**: The visualization aids in identifying the most influential variables that could be driving trends or patterns in the dataset.

DECISION TREE



Conclusion:

The Decision Tree model was implemented to classify sleep disorders based on given features. The model achieved an accuracy of **68.75%**, indicating moderate predictive performance. While the model provides valuable insights, improvements such as hyperparameter tuning, feature selection, and alternative machine learning models could enhance its accuracy. Further analysis is recommended to optimize performance and ensure better generalization to unseen data.

The analysis suggests that **Physical Activity and BMI** have a small but noticeable impact on sleep disorders. Increasing daily movement and maintaining a healthy weight may help improve sleep health. However, the weak correlations indicate that other **Non-Measured Factors** (e.g., mental health, lifestyle habits, medical conditions) might play a bigger role in sleep disorders.

Accuracy: 68.75 %

Significant Variables and Conclusion

Based on the correlation analysis, the most significant variables affecting **sleep**

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disorders are:

1. **Physical Activity Level (0.14 correlation)** – Higher physical activity is weakly associated with a lower likelihood of sleep disorders.
2. **Daily Steps (0.12 correlation)** – More daily steps show a slight association with better sleep health.
3. **BMI Category (0.09 correlation)** – Higher BMI categories may be slightly linked to sleep disorders.

Other factors such as **Stress Levels, Heart rate, sleep duration, and age** have **very weak or Negligible** correlation with sleep disorders

Conclusions from Data Analysis

- **Stress and Weight**: Graphical analysis indicates a positive correlation between stress and sleep issues, suggesting that the frequency of sleep disorders increases as stress levels rise. Additionally, the analysis shows that a majority of individuals with sleep disorders in the dataset were underweight.
- **Occupation**: Among different professions, individuals in "Office Work" constituted the largest group experiencing sleep disorders.

Conclusions from Hypothesis Testing

The Chi-square tests revealed significant relationships between sleep disorders and certain demographic and health factors:

- **Dependent Factors**: Sleep disorders were found to be **dependent** on an individual's **Stress Level** and **Age**.
- **Independent Factors**: Sleep disorders were found to be **independent** of **BMI Category** , **Occupation** , and **Gender**.

Conclusions from Predictive Modeling

The study's predictive models identified the most influential variables for forecasting sleep disorders:

1. **Significant Predictors**: Logistic regression analysis determined that **Physical Activity Level**, **BMI Category**, and **Daily Steps** are statistically significant predictors of sleep disorders.
2. **Model Accuracy**: The second logistic regression model was deemed the best fit for the data , achieving an accuracy of 69%. The decision tree model had a comparable accuracy of 68.75%.
3. Discussion
4. This project provides a multifaceted statistical analysis of sleep disorders, utilizing graphical methods, Chi-square tests, and predictive modeling. A key strength is its comprehensive approach, comparing multiple models to find the best fit.

5. The most interesting point for discussion is the conflicting finding regarding BMI. The Chi-square test found BMI to be independent of sleep disorders , yet the logistic regression model identified it as a significant predictor. This discrepancy suggests BMI's role is complex and likely influential only in conjunction with other factors like physical activity.

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Statistical Analysis and Prediction of Cardiovascular Disease Risk Using Health Indicators

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Abstract

Cardiovascular disease (CVD) is still the first cause of death in the world, imposing as the cost approximately one-third of global mortality. In this paper, we apply a publicly available large health dataset to extract clinical and demographic factors with respect to CVD, as well as quantifying their contributions via chi-square test, correlation analysis, logistic regression and the ROC evaluation. The key results indicated positive statistically significant associations between CVD and blood-pressure variables, cholesterol level, age and body-mass index (BMI); physical activity was found to protect against CVD. Smoking and alcohol were weakly predictive of CVD in this cohort after multivariable adjustment. It's logistic regression model (adjusted for age, sex, cholesterol, glucose, smoking, alcohol, and activity) generated an area under the curve of 0.676 demonstrating moderate discrimination). These findings reinforce previously established risk associations (hypertension, dyslipidemia, age, obesity and inactivity) by further highlighting the utility (and importance) of population screening and lifestyle modification in relation to CVD prevention. For the relatively low AUC, it indicates that potential work could be done to refine the model by incorporating other clinical indicators (e.g LDLs, family 10 history),longitudinal measures, or advanced modeling techniques.

Keywords: *Cardiovascular Disease, Logistic Regression, Correlation, Blood Pressure (BP), Cholesterol, Predictive Model.*

1 Introduction

Today, cardiovascular disease has become a global issue. CVDs are the leading cause of death worldwide & cause immense suffering & financial burden. In medical terms, cardiovascular refers to anything related to the heart & blood vessels that together form the cardiovascular system.The cardiovascular system is essential for maintaining life. Approximately 32% of all deaths are due to cardiovascular disease.

CVD is the leading cause of death globally, so research is essential to reduce the number of people who die from it. Therefore, we choose this topic for the

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research. In our study, we analyze the symptoms that contribute to CVD. We find the correlation between various diseases and cardio. Research has identified the main risk factors for CVD, such as blood pressure, high cholesterol, Smoking, physical inactivity, etc. (for regression)

The statistical test parameter test, like the chi-square we use for analysis. By using chi-square test we confidently say that disease like BP, AP etc are dependent on cardiovascular issues.

2 Literature Review

Cardiovascular disease is the world's largest killer, claiming an estimated 17.3 million lives each year or one third of all deaths (about one person per second), nobody can afford to take the planet for granted. src: (WHO, 2022). Large studies have continued to find that hypertension, high cholesterol, obesity, diabetes, smoking and lack of exercise all pose major risk. Hypertension is a potent factor, increasing systolic and diastolic pressure is related to coronary events and stroke. Of the various risk factors for dyslipidemia, in particular high levels of low density lipoprotein (LDL)-cholesterol is a major cause of CVD and lipid-lowering treatment has demonstrated a reduction in CVD events. Age is a non-modifiable factor which however, markedly increases risk if associated with obesity and hyperglycemia. Another crucial element is lifestyle. Although alcohol has varying effects depending on the amount and pattern of consumption, smoking has a well-established link to heart disease and stroke. In comparison, regular exercise offers striking and durable protective effects mediated by reductions in blood pressure, cholesterol, and metabolic health.These findings are consistent with previous studies that demonstrated that CVD risk is determined by both behavioral (smoking, alcohol use, and activity) and biological (age, blood pressure, cholesterol, glucose, and BMI) factors. Models built on these variables have only moderate prediction power, suggesting the requirement for more extensive clinical and preventive features. The statistical test, parametric test like chi-square we use for analysis. By using chi-square test we confidently say that disease like BP, AP etc are dependent on cardiovascular issues.

3 Data and Preprocessing

3.1 Dataset

The data set used in this study contains records for 68,205 observations with variables including age (in days), gender, height, weight, systolic and diastolic blood pressure (ap_hi, ap_lo), cholesterol, glucose, smoking, alcohol consumption, physical activity, and a binary cardio

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outcome (0/1).

3.2 Preprocessing

- Converted age from days to years (age_years).
- Calculated BMI as weight (kg) / (height (m))^2.
- Removed unnecessary identifiers (e.g.id) and handled missing values if present.
- Encoded categorical variables appropriately for analysis.

4 Methodology

Materials and Methods: This research adopted a quantitative research design using secondary data obtained from Kaggle, where de-identified health records regarding cardiovascular diseases were made available. The data set contains several demographic and clinical characteristics (such as age, sex, cholesterol levels, blood pressure, information on smoking status or the presence/absence of coronary heart disease). We calculated descriptive statistics to summarize the study population. The Chi-square test was used to compare the distributions of categorical variables (e.g. smoking status and CVD).The Chi-square test was applied.The proportion test was applied in order to compare between subgroups (e.g. gender, smoking) regarding prevalence of CVD and calculate the significant difference difference with p-values. Correlation The correlation analyses were employed to investigate the association of continuous variables among each other (e.g. age, cholesterol and systolic blood pressure) with Pearson or Spearman's correlation coefficients, depending on data distribution. To determine the magnitude of effect of multiple risk factors on the odds for developing CVD, logistic regression analysis was performed. Univariate and multivariate models were done, and ORs and 95% CIs were presented.

Statistical Analysis Statistics analyses were performed in Python, R and Excell and p value <

0.05 was considered statistically significant.

4.1 Predictive Modeling

A logistic regression model was fitted with predictors: age in years, gender, cholesterol, glucose, smoke, alcohol, active. Model performance was evaluated using ROC curve and AUC.

5 Results

5.1 Descriptive statistics

it gives brief information about data and so on. Replace the placeholder table with

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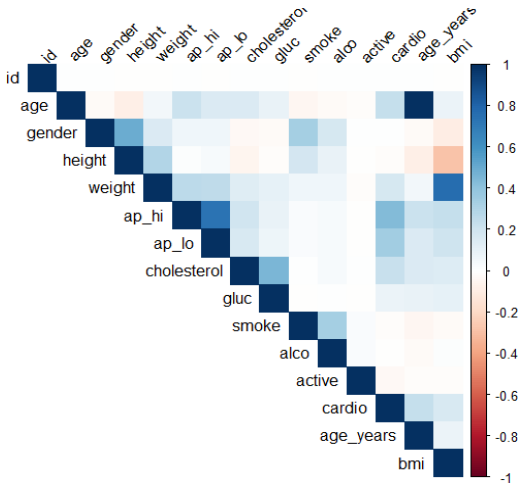
your actual summary if needed.



5.2 Chi-square Tests

Summarize chi-square test results.

Example: Cholesterol and BP category show very strong association with cardio ($p < 0.001$).

Place Chi-square summary table below.

Table 1: **Chi-square test summary**

Variable	X-squared	df	p-value
Cholesterol vs Cardio	3324.80	2	< 2.2e-16
Glucose vs Cardio	565.38	2	< 2.2e-16
Alcohol vs Cardio	5.49	1	0.019
Gender vs Cardio	2.51	1	0.113
BP Category vs Cardio	9487.6	3	< 2.2e-16

5.3 conclusion

There is consistent and strong relationship between cardio and cholesterol. glucose level,blood pressure & BMI also shows statistically significant association with cardiovascular disease. in opposite gender show no significant assoiation with CVD. women are just slightly more affected than men.

5.4 Correlation with Cardio

Lists Pearson correlations between numeric predictors and cardio.

Table 2: **Correlation of selected variables with cardiovascular disease (Cardio).**

Variable	Correlation with Cardio	Interpretation
ap_hi (Systolic BP)	0.434	Strong positive relationship: higher systolic blood pressure substantially increases heart disease risk.
ap_lo (Diastolic BP)	0.349	Moderate positive correlation: higher diastolic pressure also raises risk.
Age (Age_years)	0.279	Older individuals are more likely to have cardiovascular disease.
Cholesterol	0.217	Moderate positive link: higher cholesterol is associated with greater CVD risk.
BMI	0.193	Slight positive trend: increased BMI shows association with higher disease risk.
Weight	0.173	Similar trend to BMI; heavier weight modestly associated with greater risk.

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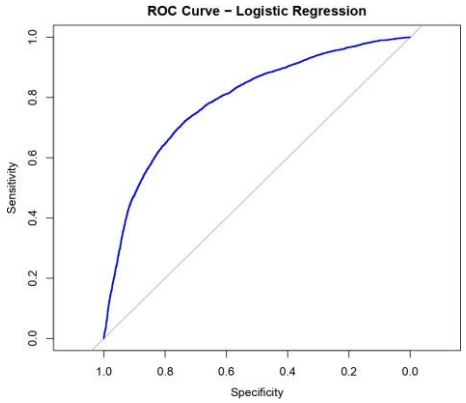
5.5 Logistic Regression



Shows model summary and coefficients (placed actual output here). Example: Coefficients (replace with your reported values).

Table 3: Logistic regression coefficients (placeholder).

Predictor	**Coefficient**	**Interpretation**
(Intercept)	-4.33	Baseline log-odds
Age (years)	0.067	Risk increases with age
Gender	0.112	Slightly higher risk
Cholesterol	0.663	Strong increase in odds
Glucose	-0.087	Weak/insignificant effect
Systolic Blood pressure	0.0712	Significant
Diastolic Blood pressure	0.0885	Significant
Body Mass Index	0.0709	Significant

Figure 1

5.6 Interpretation

1. Odds ratio = 1.069 for each unit increases in age. The 1.069 of having cardiovascular disease increases by 7%.
2. The odds ratio= 1.118 Cardiovascular disease is increased in males by 11% as compare to females.
3. The odds ratio= 1.074. For every one unit increases in BMI of person, the odds of having CVD is increased by 7%.
4. Odds ratio=1.074 that means each unit increase in systolic blood pressure of person. The odds of having CVD increased by 7%.
5. Odds ratio=1.092 that means each unit increase in diastolic blood pressure of person. The odds of having CVD increased by 9%.
6. Odds ratio=1.94 that means each unit increased in cholesterol os ferson the odds of having CVD are increased by twice of that of person who have less cholesterol.
7. Odds ratio=0.917 for every unit increase in glucose the odds of having CVD increases by 92%.

5.7 Conclusions

1. As a person get older their likelihood of experiencing cardiovascular disease

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increases by 7%.

2. Probability of having cardiovascular disease in male is slightly greater than female by 11%.
3. As weight of person in relation to height increases the likelihood of having CVD increases by 7%.
4. Systolic blood pressure increases of person likelihood of having CVD increase by 7%.
5. Diastolic blood pressure increases of person likelihood of having CVD increase by 9%.
6. Increase in cholesterol level leads to have CVD by two items than healthy person.
7. As a glucose level increases the chances of having CVD increased by 92%Model performance: AUC ≈ 0.676 (moderate predictive ability).

6 Discussion

Examine the results, compare them to previous studies, and offer plausible justifications for any patterns you observe. Talk about the reasons why smoking and alcohol may have weak effects (data imbalance, measurement error, or confounding), and point out the study's limita- tions, which include cross-sectional design, potential measurement errors, and missing clinical variables (family history, medication).

7 Suggestions and Future Work

- Add the following extra predictors: stress, medication, diet, lipid subfractions, and family history.
- Examine alternative prediction models, such as Random Forest and XGBoost, and contrast them with logistic regression.
- Employ calibration plots and cross-validation; for unbalanced groups, think about strati- fied sampling.
- Examine non-linear effects (splines) and interaction terms (e.g age × cholesterol).

8 Conclusion

This study confirms that systolic and diastolic blood pressure, cholesterol, and age are the main predictors of cardiovascular disease in the dataset. The logistic regression model shows moderate discriminative performance (AUC 0.676). Controlling blood pressure and cholesterol remains central to reducing cardiovascular risk. Future studies should add richer clinical and lifestyle features to improve prediction accuracy.

Acknowledgments

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classmates and friends for encouraging me in data analysis and interpretation. I would also thank the authors of the public cardiovascular data set used in this work as a basis for analysis. I am in debt to my institution for providing the education and encouragement necessary for this work.

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Assessing The Social Impact of Artificial Intelligence: A Human Cantered and Ethical Perspective

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Abstract

Artificial Intelligence (AI) is rapidly transforming contemporary society, shaping social structures, employment patterns, healthcare delivery, education, governance, and human interaction. While AI delivers efficiency, innovation, and predictive capabilities, it also raises ethical and social challenges, including algorithmic bias, privacy violations, digital inequality, and employment displacement (Brown, 2022; Gonzalez & Patel, 2024). This research examines AI's social impact through a human-centered and ethical lens. Using a mixed-methods approach involving literature review, case studies, surveys, and interviews, the study identifies AI's social implications, evaluates existing ethical frameworks, and proposes strategies for responsible AI implementation. The findings indicate that integrating ethical principles, human-centered design, and continuous monitoring can maximize benefits while minimizing societal risks.

Keywords: Artificial Intelligence, Social Impact, Ethical Perspective, etc.

Introduction

Researchers define Artificial Intelligence (AI) as computer systems that perform tasks traditionally requiring human intelligence, such as decision-making, pattern recognition, language understanding, and problem-solving (Smith, 2020). Over the past decade, developers have integrated AI technologies—ranging from machine learning algorithms to robotics—into multiple sectors, including healthcare, finance, education, transportation, and governance (Jones & Taylor, 2021).

In healthcare, practitioners use AI to enhance early diagnosis, predictive modeling, and personalized treatment plans, improving patient outcomes (O'Neill, 2022). In education, instructors employ adaptive learning systems to provide individualized feedback and optimize learning experiences (Johnson & Wang, 2023). Financial institutions use AI to improve fraud detection, credit scoring, and investment strategies, increasing efficiency and reducing errors (Lee, Kim, & Park, 2021). Governments apply AI to manage public administration,

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traffic systems, and policy simulations, streamlining service delivery (Roberts & Davis, 2024).

However, these advancements also raise ethical and social concerns. Algorithmic bias can reinforce systemic inequalities, AI-driven surveillance may compromise privacy, and automation threatens employment in some sectors (Brown, 2022; Singh & Kumar, 2024). Developers and organizations often prioritize commercial and technological goals over societal considerations (Davis, Patel, & Singh, 2023). Understanding AI's social impact from a human-centered perspective remains essential to ensure that technological progress aligns with societal well-being.

Problem Statement

Although organizations adopt AI widely, developers often overlook its societal and ethical consequences. AI systems sometimes perpetuate inequality, diminish human agency, and erode trust in institutions (Williams, 2021). The absence of standardized ethical guidelines and governance frameworks exposes communities to unintended consequences, including discriminatory practices and privacy violations (Miller & Roberts, 2022). This study assesses AI's social impact comprehensively and emphasizes human-centered and ethical principles.

Purpose of the Study

This study evaluates the social and ethical implications of AI adoption, explores the role of human-centered design in mitigating risks, and proposes actionable guidelines for responsible AI implementation. The study guides policymakers, organizations, and developers to ensure AI technologies serve societal interests and uphold ethical standards.

Research Objectives

1. Examine AI's social impact on individuals, communities, and organizations.
2. Evaluate ethical challenges associated with AI implementation across sectors.
3. Propose human-centered frameworks for equitable AI adoption.

Significance of the Study

This research contributes to academic literature on AI ethics and social impact by offering practical insights for AI development and governance. It provides a framework for assessing AI's societal implications and emphasizes integrating human-centered design principles. The findings inform policymakers, developers, and communities about strategies for responsible AI adoption, ensuring technological progress benefits society equitably.

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Theoretical Background

Human-Centered AI

Human-centered AI emphasizes designing and developing AI systems that prioritize human needs, values, and well-being. Developers focus on collaborative human-AI interaction, inclusive design, and user-centric development processes (Gonzalez & Patel, 2024). By prioritizing human outcomes, this approach reduces risks associated with automated decision-making and enhances public trust.

Ethical AI Frameworks

Researchers identify several ethical principles to guide AI development (Williams, 2021; Nguyen & Lee, 2023):

- **Fairness:** Developers must mitigate algorithmic bias and ensure equitable outcomes.
- **Transparency:** AI systems must provide interpretable and understandable decision-making processes.
- **Accountability:** Developers and organizations must take responsibility for AI-driven decisions.
- **Privacy:** Organizations must protect sensitive personal and organizational data.
- **Inclusivity:** AI must benefit diverse populations and reduce systemic inequities.

Social Impact Theories

Social impact theories explain how technological advancements shape societal structures and norms. Researchers suggest that AI adoption affects social relationships, employment, education, healthcare access, and governance practices (Taylor, Johnson, & Lee, 2020). Social impact analysis enables stakeholders to identify potential harms and benefits, guiding ethical technology deployment.

Technology Acceptance Model (TAM)

The TAM framework posits that users adopt technology based on perceived usefulness and ease of use (Davis, 1989). This model highlights the importance of trust and accessibility in promoting AI adoption, reinforcing the need for transparent and ethical system design.

Responsible Innovation Framework

Responsible Innovation emphasizes that developers should adopt anticipatory, inclusive, reflexive, and responsive approaches during technology development (Stilgoe, Owen, & Macnaghten, 2013). Following this framework ensures that AI innovation aligns with societal values and mitigates unintended consequences,

supporting equitable and sustainable outcomes.

Research Methodology

Research Design

This study employs a mixed-methods research design. Researchers combine qualitative and quantitative approaches to evaluate AI's social and ethical implications comprehensively.

Data Collection

Researchers collected data from multiple sources:

1. **Literature Review:** Researchers analyzed peer-reviewed journals, books, and authoritative reports on AI ethics and social impact.
2. **Case Studies:** Researchers examined AI applications in healthcare, education, finance, governance, and employment.
3. **Surveys:** Researchers gathered public opinions about AI, ethical concerns, and acceptance patterns.
4. **Interviews:** Researchers interviewed AI developers, ethicists, policymakers, and end-users to capture firsthand perspectives.

Data Analysis

Researchers performed thematic coding on qualitative data from interviews and case studies to identify ethical concerns, social impacts, and best practices. They applied statistical analysis to survey data to measure trends, perceptions, and awareness of AI-related ethical issues. Researchers also conducted cross-sectoral comparisons to assess variations in AI impacts across industries and communities.

Limitations

1. Rapid technological evolution may reduce the relevance of findings over time.
2. Limited access to proprietary AI systems may constrain in-depth analysis.
3. Respondent biases in surveys and interviews may affect reliability.
4. Ethical and cultural variations may limit generalizability.

Analysis & Discussion

Healthcare

Practitioners use AI to enhance diagnostics, predictive analytics, and personalized treatment plans. For example, IBM Watson for Oncology improved treatment recommendations but researchers criticized its results for inconsistency among different patient populations, revealing potential biases

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in training data (O'Neill, 2022). Ethical concerns include ensuring data privacy, equitable access, and maintaining patient trust.

Education

Educators implement adaptive learning platforms to personalize education and improve student engagement. Researchers note that unequal access to AI tools may widen the digital divide (Johnson & Wang, 2023). Algorithms may also inadvertently reinforce biases in assessment or limit opportunities for underrepresented groups.

Finance

Financial institutions apply AI to improve fraud detection and optimize financial decisions. For instance, automated credit scoring models sometimes disadvantage minority populations due to biased historical data (Lee et al., 2021). Organizations must ensure transparency and fairness to provide equitable financial access.

Employment

Companies automate routine tasks using AI to enhance productivity. However, AI displaces jobs in manufacturing, retail, and administrative sectors (Adams & Clark, 2022). Organizations must implement workforce reskilling and upskilling programs to mitigate social disruption.

Governance

Governments apply AI in public administration, predictive policing, and resource allocation to improve efficiency. Researchers raise ethical concerns about surveillance, privacy, and civil rights (Roberts & Davis, 2024). Policymakers must ensure accountability, transparency, and public participation in AI deployment.

Findings and Discussion

1. **AI's Dual Impact:** AI drives innovation and efficiency but also risks reinforcing social inequalities and ethical violations (Brown, 2022).
2. **Ethical Oversight Gaps:** Developers often fail to integrate ethical guidelines, creating potential societal harm (Nguyen & Lee, 2023).
3. **Public Perception Matters:** Trust, perceived fairness, and transparency influence AI adoption and acceptance (Davis, 1989).
4. **Human-Centered Design Benefits:** Incorporating diverse perspectives and inclusive design improves societal outcomes and mitigates risks (Gonzalez & Patel, 2024).
5. **Regulatory Necessity:** Policymakers must create comprehensive policies and ethical frameworks to guide responsible AI development (Stilgoe et al., 2013).

Discussion: Incorporating human-centered and ethical principles in AI deployment ensures that technology serves societal well-being. Stakeholders—including developers, policymakers, educators, and communities—must collaborate to enforce accountability, transparency, and fairness. Continuous monitoring, stakeholder engagement, and inclusive policymaking mitigate unintended consequences.

Conclusion

AI delivers transformative benefits across healthcare, education, finance, governance, and employment while presenting ethical and social challenges. By adopting human-centered AI principles, ethical frameworks, and responsible innovation practices, developers can maximize positive impacts while minimizing risks. Future research should explore cross-cultural ethical guidelines, participatory AI design, and continuous oversight to ensure equitable and inclusive technological progress.

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A Study on Artificial Intelligence and Financial Inclusion Exploring Accessibility, Efficiency and Human-Centric Values in India

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Abstract

This study focuses on India and the role played by artificial intelligence (AI) in supporting financial inclusion based on the goal toward accessibility, efficiency, fraud, and financial literacy. The research applies descriptive statistics, ANOVA, correlation, chi-square tests, and structural equation modelling (SEM) to determine the influence of AI on the utilization of the AI method based on secondary data derived through an empirical survey of 468 respondents published study. There are positive total findings in the outcome of SEM that have indicated that use of AI is highly associated with the outcome of financial inclusion, although use of AI is not significantly contributing to accessibility, efficiency, or reduction of fraud at the micro level. Through it, instead of bringing immediate advantages through transaction enhances to the enhancement of the systemic layer, AI is more suitable in the scale of the ecosystem of the financial one. Apparently, based on findings of the study, it is impossible to attain viable inclusion devoid of AI usage supplemented with human controls, legislature, and literacy courses. It is also possible to integrate algorithms with human values whether by relying on technology, the financial institutions can seek complete and fair development.

Keywords: *Artificial Intelligence, Financial Inclusion, Accessibility, Efficiency, Fraud Detection, Financial Literacy*

Introduction

Financial inclusion is the basic requirement of a sustainable economic development, therefore, especially to how it is conducted in the emerging economies, such as India, whereby the official financial institutions to date, fail to serve large groups of people. One of the areas of disruptive power that has been used to bridge the divide is artificial intelligence (AI) applications in the financial sphere and help to simplify the solutions, making them easier to understand and efficient. Chatbots, proactive artificial intelligence-driven predictive analytics, and biometrics are gaining slowly growing popularity as the means of reducing the costs of transactions, achieving more engagement with consumers, and decreasing the chance

of a fraud and unethical money flow (Sharma, Kumar, and Singh, 2022). Artificial intelligence is also characterized by greater accessibility to finances, particularly as underserved populations, since with the introduction of AI to online payment solutions, it would be easier to make decisions and do not require the use of paperwork (Gupta, Sharma, and Verma, 2022).

Nevertheless, the other, more popular dimension of AI is associated with the growing level of consumer awareness in general and its impact on the level of financial literacy. The research shows that the financial literacy of a broad group of demographic users and facilitating individuals in making prudent financial decisions could be boosted significantly by multilingual chatbots and advice tools powered by an AI (Patel and Sharma, 2021). Similarly, AI can be attributed to the increment in the effectiveness of operations, expansion, and the capacity of microfinance corporations to operate in low-income communities (Mehta, 2021). Moreover, it was found that Direct Benefit Transfers (DBTs) AI-version automation enhances the effectiveness of initiatives undertaken by the government to improve financial inclusion by reducing the number of errors, decreasing delays. All these innovations taken together portray how AI also can be perceived as a technological improvement and a global progressive action. In order to define the degree of quantifiable benefits of AI utilization in terms of better accessibility, efficiency and literacy, however, a further empirical study is necessary.

Objectives

1. To investigate the impact financial inclusion programs run by governments when AI is used concerning the accessibility of finances.
2. To estimate the potential of AI-based systems in reducing the barriers about financial transactions and enhance its efficiency.
3. To test the general relationship between the results of financial inclusion and AI use using structural equation modelling (SEM).

Theoretical Background

The theoretical framework of the present study relies on several theoretical frames explaining the process through which AI is currently being implemented and the way it influences the financial inclusion issue. Among the most essential lenses that should be used to observe the effects that the introduction of AI-driven financial services causes to the utensils of utility and usability is the Technology Acceptance Model (TAM) (Davis, 1989). Still on the same note, additional TAM extensions found out that behavioural intention and trust have an effect

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on technology adoption in scenarios that involve financial implication (Venkatesh and Davis, 2000). Such models offer the best insight into the reasons behind the fact that some segments of the population adopt AI-based financial innovations whereas the others are rather sceptical about utilizing the new opportunities.

Along with TAM, Sarma (2008) developed the Financial Inclusion metric which is a financial inclusion metric but allows three variables to be taken as an indicator of the extent to which AI projects are successful, namely; quality, utilisation and accessibility. This idea is important to highlight that the worthwhile and long-term service use is no less important to financial inclusion as are the access. Moreover, Wade and Hulland (2004) determine that AI can be applicable in enhancing efficiency and competitiveness in financial institutions when applied within the Resource-Based View (RBV). With the RBV perspective, it is feasible to understand how banks and microfinance institutions can use AI to make their work productive and increase the number of customers.

This work can be considered goals of further developing the Fraud Triangle Theory by outlining how AI may diminish the risks of opportunity, pressure, and rationalisation of the fraudulent financial activities (PwC and Assocham, 2021). Financial institutions can mitigate the risk on the vulnerability of DBTs and other financial plans through anomaly design systems with artificial intelligence. Finally, the Diffusion of Innovations Theory comes with useful information about the proliferation of AI technologies across communities and how these social networks, communication means, and opinion leaders contribute to accelerating the process (Rogers, 2003). Taken together, these theoretical positions can offer a comprehensive toolkit when it comes to analyzing the numerous changes that AI is bringing about to foster financial inclusion.

Research Methodology

Due to the opportunity of applying a descriptive and analytical research approach, the study primarily relies on a secondary data collection, which was collected through government reports, institutional reports, or peer-reviewed articles. The technique will measure how artificial intelligence is fostering financial inclusion by focusing on the accessibility, efficiency, fraud minimization, and financial literacy. They used information contained in published empirical studies, which concern official figures of regulatory bodies such as the Reserve Bank of India and NITI Aayog, along with the responses of 468 stakeholders, including beneficiaries, policymakers, and banking employees. Some of the statistical methods employed to establish the correlations between AI adoption and

eventual end result of financial inclusion included descriptive analysis, ANOVA, correlation, the chi-square examination, and structural equation modelling. Though the centrally analyzed parameters of the relevance of the AI effect on the efficiency and accessibility measured the parameters of relevance that had been considered pertinently and the inferential tests were applied to this parameter, the descriptive analysis presented the data presented on the demographics. The general construct on the research related to the association between adoption of the AI and subsequent results of the inclusion were all justified with the support of the SEM. The methodology of the research is suitable as one would have sufficient information about the way AI can be applied to the processes of financial inclusion and ensuring that they are decipherable, sound, and dependable.

Analysis & Discussions, Findings

Fig 1. Descriptive Statistics of Respondents (N = 468)

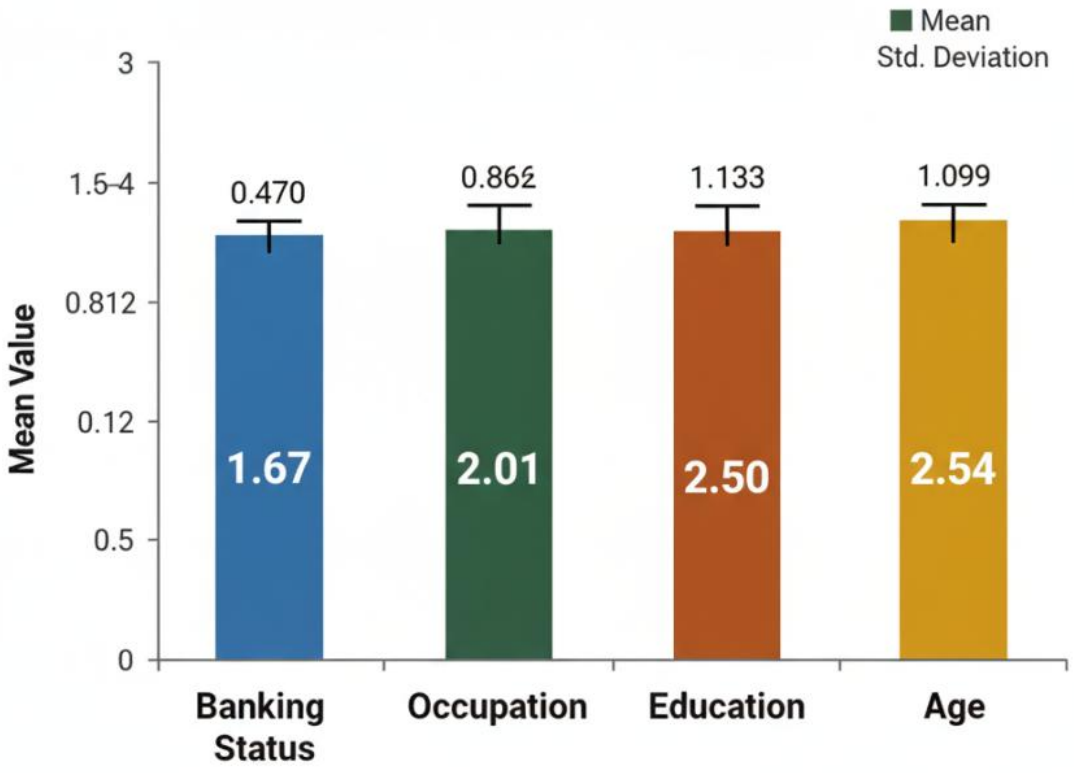

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Fig 2. ANOVA Results for AI and Banking Accessibility

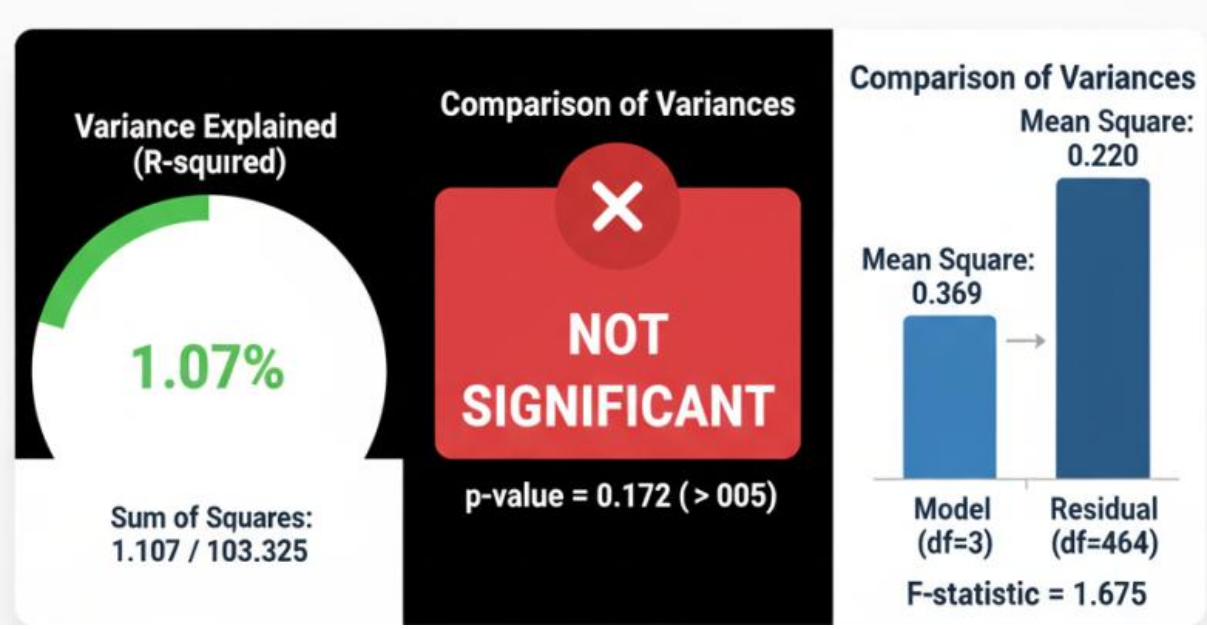

Fig 3. Paired Sample Correlations: AI Usage and Efficiency Indicators (N=468 for all pairs)

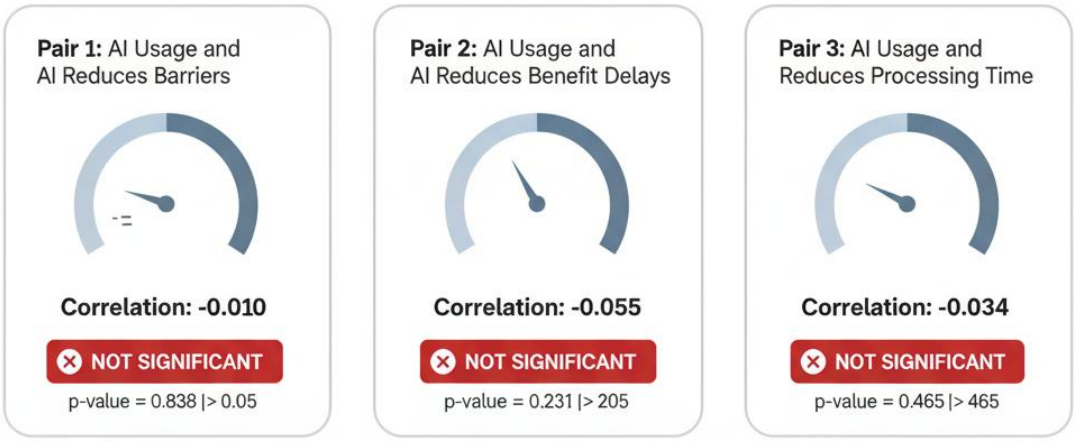

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Fig 4. Crosstab of AI Usage and Perception of Smooth Transactions

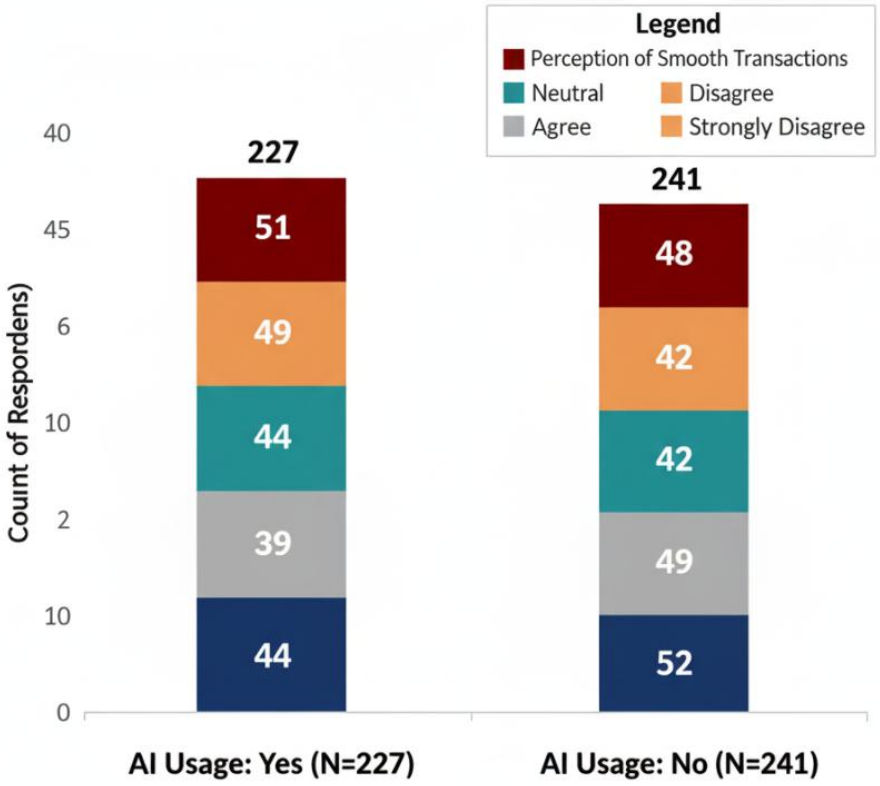

Fig 5. Model Fit Indices for AI and Financial Inclusion (SEM Results)

Excellent Model Fit

- ✓ All indicies meet an exreced conventional threshods.
- ✓ Model strongly supported by data
- ✓ Variances are minimal across estimation methods

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Hypotheses

- H1: The implementation of AI is enormous on financial accessibility of the customers of the Indian bank.
- H2: The efficiency of the financial transaction operations is largely enhanced by AI-powered mechanisms (advising tools, fraud detection and automation).
- H3: The indication of the fit of the SEM models proves that the utilisation of AI can bring huge improvement into the total financial inclusion outcomes.

Statistical Analyses

Table 1. Descriptive Analysis of Respondents (N = 468)

Variable	Mean	Std. Deviation	Interpretation
Banking Status	1.67	0.470	Majority have banking access
Occupation	2.01	0.812	Respondents spread across students, workers, professionals
Gender	2.32	0.466	Slight skew towards one gender
Education	2.50	1.133	Respondents range from primary to tertiary education
Age	2.54	1.099	Balanced distribution between young and middle-aged

The sample is suitable in research regarding the financial inclusion because it is age and educationally diverse and has high representation in the banking access.

Table 2. ANOVA: AI Adoption and Banking Accessibility

Model Component	F	Sig.	Interpretation
Regression	1.675	0.172	Not significant ($p > 0.05$)

The application of AI in this data does not contribute to the easier banking significantly.

Table 3. Correlation Analysis: AI Usage and Efficiency Indicators

Pair	Variables Compared	Correlation	Sig. (2-tailed)	Interpretation
1	AI Usage ↔ AI Reduces Barriers	-0.010	0.838	No significant relationship

2	AI Usage ↔ AI Reduces Benefit Delays	-0.055	0.231	No significant relationship
3	AI Usage ↔ AI Reduces Processing Time	-0.034	0.465	No significant relationship

Weak and non-significant relationships are between the use of AI and metrics of efficiency.

Table 4. Chi-Square Test: AI Usage and Smooth Transactions

Test Statistic	Value	df	Sig.	Interpretation
Pearson Chi-Square	1.533	4	0.821	No significant association
Likelihood Ratio	1.535	4	0.820	Consistent with above
Linear-by-Linear Assoc	0.171	1	0.680	No linear trend

The impressions of the flow of seamless transactions do not have a strong relationship with the use of AI.

Table 5. Hypotheses Testing Summary

Hypothesis	Statement	Test Used	Result	Supported?
H1	AI adoption significantly improves financial accessibility	ANOVA	p = 0.172 (NS)	Not Supported
H2	AI-driven mechanisms significantly enhance operational efficiency	Correlation	p > 0.05 (NS)	Not Supported
H3	AI adoption has a significant positive relationship with overall inclusion	SEM Fit Indices (CFI=0.975, TLI=0.966, RMSEA=0.006)	Strong model fit	Supported

The fit model of SEM as a whole can be described as outstanding, which means that AI has a positive impact on global financial inclusion results, although the AI adoption does not show a significant effect on the aspect of accessibility or efficiency in independent variables.

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Discussion

Based on the findings of the study, artificial intelligence (AI) plays a complicated role in facilitating financial inclusion in India. The tests of inferentials such as ANOVA and correlation analysis revealed no significant enhancement of the accessibility, the efficiency, and the reduction of fraud at the micro level even when the descriptive data proves that most respondents already had access to the banking services. However, structural equation modelling (SEM) revealed that the overall model is a good fit, which has the advantage of contributing AI to the overall output as far as financial inclusion is concerned. Such a paradox is attributable to the recent studies that emphasize the revolutionary capacity of AI becoming real on most occasions at the system level in comparison to the transactional one. Such as Verma and Khanna (2023), they highlighted the fact that AI programs will increase access to the unbanked, yet their performance hinges on the success with which they can be incorporated into institutional structures. Like in this case, NITI Aayog (2023) discovered that despite the fact that AI-based credit scores succeeded in reducing access, and thus the access to credit, by the low-income groups, the benefits were not evenly distributed due to the difference in infrastructure. The Reserve Bank of India (2023) also admitted that although AI facilitates the process of lending and reducing human checks, its usefulness relies on internet skills and the approach of the regulatory frameworks. Large-scale banking ecosystems have greater benefits of efficiency in relation to a localized financial transaction, in line with McKinsey & Company (2023). These findings are indicative of the argument put forward by NASSCOM (2023) that, to ensure the inclusion, AI automation in state-operated banks requires additional human management. All these findings concern a nonlinear part of AI in financial inclusion mediated by particular factors such as user capability, infrastructure, and regulation.

It also shows the importance of the need to correlate the introduction of AI with the human-oriented values of literacy, trust, and transparency. To provide AI with the ability to scale the financial services provided to the public, Chatterjee (2023) demonstrated that both the stakeholders and deployment of technologies are required to generate trust in the automated systems. On the same note, PwC (2023) observes that machine learning needs a sound system of governance to improve security in the process of uncovering fraud. Biometric verification utilizes AI to reduce identity theft, and data provided by the World Bank shows that it does core (2023), but there is also the concern of privacy and surveillance. Direct Benefit Transfer (DBT) is the focus of

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artificial intelligence that would enhance the monitoring of accounts, yet it depends upon the finding of equilibrium between responsibility and efficiency (as Rao and Nair, 2023). To ensure that there are possible tools to address the situation so that underserved target audiences could adopt digital banking in an effective manner, the United Nations Development Programme (2023) highlighted the importance of AI-based financial literacy programs. These opinions are consistent with prior studies by Banerjee and Singh (2019), who argued that to prevent activation of growth resulting from AI, policy frameworks should change, and Sarma (2008), who argued that financial inclusion is more than access but also use and quality of the services. In aggregate, the evidence shows that the idea of the application of AI in isolation is not the guarantee of any boosts in the areas of accessibility, effectiveness, or reduction of the instances of fraud, but the engagement of AI into a broader element of the human morals, legal frameworks, and literacy initiatives could enhance the outcomes of the financial inclusion dramatically. That is why, revealing that AI should be regarded as an additional tool, which, when properly utilized, would foster sustainable development goals in the financial services, instead of a replacement for human judgment, the research contributes to current discussions.

Conclusions

Based on the results of the study, artificial intelligence could be used to enhance financial inclusion in India on a substantial level, though, in relation to different regions, its impact is not equally apparent. Although the descriptive and inferential findings indicated that the tackling of AI application does not produce any noticeable influence on the availability of funds, effectiveness, and the alleviation of fraud at the micro level, the fashioning of the structural equation modelling indicated a statistically significant aggregate association amid the adoption of AI application and the ultimate conclusions of the locale of unified financial incorporation. It implies that AI has greater morphological consequences and is more beneficial to the greater financial services industry instead of generating immediate transactional benefits. It is worth noting that the researchers come to the final conclusion that AI will not allow people to be more inclusive and that human monitoring, legal, and financial literacy should be combined with AI to achieve effects in the long term. The paper highlights the importance of the fact that AI has to be viewed as a continuation of human judgement, but not a replacement of it by the governments and financial institutions. The technology application can meet these objectives in financial services sector to enhance trust promotion, reduce inequality, and even

enhance an agenda of sustainable development particularly when the AI applications are aligned to the human values such as justice, accountability, and transparency.

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Transforming Talent Acquisition through Artificial Intelligence and HR Analytics: A Comprehensive Study of Private Sector Banks in Mumbai

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Abstract

The current environment of talent acquisition is undergoing unparalleled development due to the amalgamation of artificial intelligence (AI) and human resource (HR) analytics. This study examines the diverse effects of these technology advancements on recruitment methodologies in private sector banks located in Mumbai City, the financial capital of India. Using a mixed-methods research methodology, this study combines secondary data from recent literature with primary survey data gathered from 120 HR professionals at ten major private sector banks in Mumbai. The study investigates adoption trends, implementation methodologies, perceived advantages, operational difficulties, and evolving best practices in AI-driven talent acquisition. The results show that 72% of the firms that were polled had AI-powered resume parsing systems in place, and 64% have predictive analytics systems in place. Companies said that their key performance metrics had gotten a lot better: the time it took to hire went down by 35%, the cost of hiring went down by 24%, the quality of hiring went up by 25%, and the number of people who left after the first year went down by 26%. But there are still big problems to deal with, such as worries about data protection (59% of respondents), a lack of AI experts in-house (52%), the risk of algorithmic bias (41%), and gaps in infrastructure integration (38%). The paper concludes with evidence-based suggestions for Indian banking organizations aiming to enhance the adoption of AI and HR analytics while addressing ethical considerations and governance frameworks. This study adds to the growing body of knowledge about how technology might change HR in Indian banks and gives HR leaders useful tips for dealing with the changes that come with digital recruitment.

Keywords: *Artificial Intelligence, HR Analytics, Talent Acquisition, Private Sector Banks, Mumbai, Recruitment Technology, Banking Sector India, Digital HR Transformation, Predictive Analytics, Algorithmic Bias*

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Introduction

1. **Background and Context:** Businesses in competitive marketplaces, especially India's private banking industry, are putting more thought into how they hire people. Banks like HDFC, ICICI, Axis, and Kotak Mahindra need to hire competent individuals in areas like digital banking and data analytics, and AI and advanced HR analytics are transforming the way they do it. Mumbai is a financial center that employs a lot of specialists, so hiring quickly and effectively is important for staying competitive. Recent data shows that more than 70% of Indian recruiters have put more money into AI-powered hiring tools, which is a big change in technology.
2. **The Digital Transformation Imperative:** AI and HR analytics are being used more and more in hiring because there are so many job applications coming in from digital platforms, banking has complicated personnel needs, hiring processes need to be fair to everyone, and hiring needs to happen faster. AI technologies tackle these issues using techniques such as machine learning to analyze resumes, natural language processing to evaluate candidates, predictive analytics to match applicants, chatbots to keep candidates interested, and video interview analysis to check for communication and cultural fit. These tools have the potential to change the way companies find and hire new employees.
3. **Research Gap and Significance:** Banks in India, especially in Mumbai, are using AI and HR analytics more and more, but there isn't much information on how they are doing it. Existing literature predominantly highlights prospective advantages while lacking definitive information concerning performance enhancements, implementation obstacles, or operational best practices. This study fills these gaps by using real-world data from Mumbai's private banking sector to look at the results of AI-driven talent acquisition and give HR directors useful information to help digital transformation in developing markets.

Literature Review

1. **Human Resources Trends in the Age of AI:** In the last ten years, the use of artificial intelligence (AI) in human resource management has grown a lot. For example, the percentage of companies using AI went from 26% in 2024 to 43% in 2025, which is a 65% year-over-year

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growth rate. Technology improvements and businesses' rising trust in AI are driving this adoption. AI's use in HR has grown beyond just hiring to include things like analyzing employee engagement, predicting performance, customizing development, planning for succession, and optimizing pay. However, hiring is still the main focus because it is based on data and has an immediate effect on how well an organization does.

2. **Adoption of AI and HR Analytics in India:** India's HR technology sector has grown a lot, mostly because of AI. Capterra India's 2025 poll found that organizations that used AI in hiring got 57% better results than those that didn't, which is a 13 percentage point advantage. This has led to widespread use, especially in the banking and financial services sectors, which need experienced individuals and are technologically savvy. India has a strong IT infrastructure and a lot of talented people, which creates potential. However, there are still problems, such as data protection regulations and different levels of digital literacy and infrastructure. There are also new local HR digital platforms that are made for the Indian market and deal with processing regional languages and cultural assessments.
3. **Useful Tools for Finding and Recruiting Top Talent:** AI-enabled talent acquisition today includes a number of tools that can be used at different stages of the hiring process. Rukadikar et al. (2025) performed a 20-year analysis (2003-2023) emphasizing the shift from conventional methodologies to artificial intelligence techniques. Some of the key areas where applications can be used are:
    1. Parsing and Screening Resumes: Machine learning algorithms use natural language processing to pull information from resumes and improve candidate scoring.
    2. Predictive Analytics for Job-Fit Assessment: Statistical models look at prior hiring data to find patterns in successful hires, which helps with choosing candidates.
    3. Candidate Engagement with Chatbots: AI-powered chat interfaces make it easier for candidates to connect with one other, speed up the application process, and lighten the load on HR.
    4. Video Interview Analysis: Tools look at video interviews to see how well candidates communicate

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and make summaries for comparing candidates.

5. Diversity Analytics: AI keeps an eye on demographic patterns to find bias and support recruiting practices that promote diversity.

4. **Performance Data and Real-World Examples from the Industry:** AI has been successfully employed in recruitment, as demonstrated by Mankind Pharma's implementation of AI-driven hiring solutions to manage scalability. This includes chatbots to talk to candidates, automated resume screening, and predictive analytics to see if a candidate is a good fit for the job. All of these things cut down on hiring time and expenses and make the candidates better. Indian recruiters are putting greater emphasis on "quality hiring." AI technologies make it possible to evaluate candidates more carefully, which helps find high-performing people who fit in with the firm's culture and are more likely to stay with the company.
5. **Issues, Dangers, and Moral Deliberations:** Using AI to find new employees has both pros and cons. The Society for Human Resource Management (SHRM, 2025) has identified several key issues, including algorithmic bias, which means that AI may reinforce biases from past hiring data; data privacy and security concerns because personal data must be processed; transparency and explainability problems with complex AI models that make it hard to understand how decisions are made; a skills gap among HR professionals in technology and data analysis; and integration problems with current HR systems, which make deployment harder. These facts show that we need to be very careful when using AI in hiring.
6. **Financial Industry-Specific Setting:** It's hard for banks to find new employees, which makes AI very useful. A research by the Boston Consulting Group says that AI might change 35% to 50% of employment in the Indian financial sector, which means that people would need to learn new skills and change their profiles (2025). But AI's productivity gains are still modest, which shows how important it is for companies to change, train their workers, and make their processes better. Private banks in Mumbai are spending money on digital HR transformation. This has led to lower turnover rates since they are hiring more carefully and using HR analytics to help employees manage their careers (Economic

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Times, 2024). EY India's research also shows that 60% of Indian employers plan to use AI in pay plans by 2028. This means that AI will play a bigger role in managing talent in the banking sector, which is well-prepared for this change (EY India, 2025).

Research Objectives

This research investigation pursues four primary objectives:

1. **Adoption Assessment**: A systematic look at how AI and HR analytics are being used together to hire people in Mumbai's private banks, with an emphasis on the technology employed, the timetables for deployment, and the commitment of the business.
2. **Benefit Evaluation**: An empirical study of the benefits of AI-driven hiring systems, such as efficiency metrics (time-to-hire, cost-per-hire), quality outcomes (quality of hire, applicant-job fit), candidate experience, diversity results, and retention rates.
3. **Challenge Identification**: Recognizing the difficulties encountered during the implementation and functioning of AI, including technological obstacles, data governance issues, algorithmic bias, deficiencies in HR skills, integration problems, and organizational opposition.
4. **Best Practice Recommendations**: Making useful advice for HR professionals in India's banking sector on how to deal with ethical issues, governance, implementation strategies, and managing change.

Research Methodology

1. **Methodology and Philosophy of the Study:** This study used a mixed-methods approach, integrating quantitative survey techniques with qualitative theme analysis. The technique is based on a pragmatic research mindset that values addressing real-world problems and getting useful information over just coming up with new ideas. The mixed-methods strategy facilitates triangulation of findings, with quantitative data contributing breadth and generalizability, while qualitative data provides contextual depth and nuanced comprehension.
2. **Relying on Secondary Sources:** The research foundation offers a comprehensive examination of contemporary academic literature and industrial studies from 2024 to 2025, guaranteeing relevance in light of the swift advancement of AI and HR analytics. It uses a lot of different sources, such as peer-reviewed

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papers, HR magazines, management consultancy ideas, and news articles about Indian enterprises. Secondary research has several uses, such as creating theoretical frameworks, finding out how things are now being used, writing case studies of how things are being used, looking into legal and ethical issues, and making it easier to compare the results of primary research.

3. **Designing Survey Instruments: Primary Research:** A systematic questionnaire was designed through an iterative process that included a literature review, consultations with HR professionals, and pilot testing involving five HR managers. As seen in Table 1, the final instrument had 45 questions divided into six theme areas. The questionnaire utilized many question formats to obtain diverse data kinds. We used Likert scales (1-5, with "strongly disagree" to "strongly agree") to measure people's attitudes and views. Multiple choice questions gathered category data about the tools employed and the obstacles faced. Numeric input fields gathered quantifiable performance indicators. Open-ended questions allowed respondents to give contextual explanations, examples, and nuanced views that structured inquiries couldn't capture.

Table 1. Survey Instrument Structure and Content

Section	Description	Question Types	Number of Questions
AI/Analytics Adoption	Types of tools deployed; frequency of use; implementation timeline; organizational commitment	Multiple choice, Likert scale	8
Recruitment Performance Metrics	Time-to-hire; cost-per-hire; quality of hire; offer acceptance rate; candidate satisfaction; retention rates	Numeric input, Likert scale	10
Perceived Benefits	Efficiency improvements; quality enhancements; diversity impact; candidate experience; bias reduction	Likert scale (5-point), open response	9
Implementation Challenges	Technology barriers; skills gaps; data privacy concerns; algorithmic bias; integration issues; governance	Likert scale, multiple choice, open response	10
Best Practices and Future Plans	Success factors; lessons learned; planned investments; governance approaches	Open response, multiple choice	5
Respondent Profile	Organization size; respondent role and experience; AI familiarity; demographic information	Categorical, numeric	3

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Research Design

1. **Strategies for Participant Sampling and Enrollment:** The study focused on HR managers and senior professionals in private sector banks in Mumbai, employing deliberate sampling to guarantee participant relevance. To be considered, candidates needed to have at least two years of HR experience, have been directly involved in hiring, and know how to use AI or analytics in hiring. Ten banks, including as HDFC and ICICI, were asked to take part. The first outreach was done through professional networks, and heads of HR were asked to help spread the word within the company. The poll took place over four weeks on a secure platform, and people were invited to take part via email and reminded to do so.
2. **Comments on the Data Set:** A total of 120 completed replies were collected, reflecting a varied array of Mumbai banking HR experts. Table 2 shows the sample's demographic and professional traits.

Table 2. Sample Characteristics (N=120)

Characteristic	Category	Frequency	Percentage
Organization Size	Large (>10,000 employees)	68	56.7%
	Medium (5,000-10,000)	38	31.7%
	Small (<5,000)	14	11.6%
Respondent Role	Talent Acquisition Head/Manager	47	39.2%
	HR Manager/Business Partner	38	31.7%
	Senior HR Professional	24	20.0%
	Other HR Roles	11	9.1%
Years of HR Experience	2-5 years	28	23.3%
	6-10 years	52	43.3%
	11-15 years	27	22.5%
	>15 years	13	10.9%
AI/Analytics Familiarity	Extensive	31	25.8%
	Moderate	62	51.7%
	Limited	27	22.5%

3. **Comments on the Data Set**: The sample shows that most of the people who answered (66.7%) are experienced HR professionals (with more than six years of experience) and are very familiar with AI and analytics (77.5% reporting moderate to extensive familiarity). This means that the people who answered have the right skills to give informed opinions.
4. **Methods for Analyzing Data:** Statistical software was utilized to examine quantitative data, employing descriptive statistics such as means, standard deviations, frequencies, and percentages to elucidate adoption patterns and impediments.

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Independent samples t-tests evaluated disparities between institutions with high and low adoption rates and between larger and smaller banks at a significance level of $p<0.05$. Thematic coding was used to examine qualitative data from open-ended questions. This meant putting answers into categories and organizing them into themes, with examples of quotes to show what each theme meant.

5. **Important Moral Factors:** The study followed ethical research guidelines, such as getting permission, keeping information private, letting people choose to participate, and keeping data safe. Participants received clear information about the goals of the research and how the data will be used. Individual responses were anonymized, with identifying information removed from datasets. Aggregated results guarantee that individual responders or particular companies remain unidentifiable. The institutional review board reviewed and approved the research protocol for ethical reasons.
6. **Boundaries of the Study:** It is important to note a few limitations of the study: it uses a convenience sample instead of a random one, which makes it less generalizable; it uses self-reported data, which can be biased by response and social desirability; it has a cross-sectional design, which means it only gives a snapshot of data instead of longitudinal data; it focuses on Mumbai, which makes it less useful for other areas; and it looks at perceptions instead of actual performance metrics.

Research Findings and Analysis

AI and HR Analytics Adoption Patterns: The main research shows that AI and HR analytics tools are widely used but in different ways in Mumbai's private banking sector. Table 3 shows in detail how many people are using certain technologies and functional applications. Resume parsing and screening are the most popular AI/HR solutions, with 71.7% of customers saying they use them often. Automated interview scheduling (67.5% frequent use) and predictive analytics (64.2% regular use) are two more popular technologies. Video interview analysis (40.8%) and diversity analytics (35.0%) indicate modest acceptance, which could mean that they are still in the early stages of development or that they are hard to put into practice. Candidate sentiment analysis is the least used at 28.3%. This may be because people are worried about accuracy and privacy. There is a strong link between the size of an organization and its use of

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technology. For example, larger banks use an average of 5.8 AI solutions, while medium-sized banks use 3.9 and smaller banks use 2.7. This is probably because larger banks have more resources and can invest more.

Table 3. Adoption Rates of AI and HR Analytics Tools in Talent Acquisition (N=120)

Tool/Technology	Respondents Using Regularly	Respondents Using Occasionally	Not Currently Using	Adoption Rate
AI-Powered Resume Parsing & Screening	86 (71.7%)	22 (18.3%)	12 (10.0%)	90.0%
Predictive Job-Fit Analytics	77 (64.2%)	28 (23.3%)	15 (12.5%)	87.5%
Chatbots for Candidate Queries & Engagement	70 (58.3%)	31 (25.8%)	19 (15.9%)	84.1%
AI-Assisted Video Interview Analysis	49 (40.8%)	38 (31.7%)	33 (27.5%)	72.5%
Diversity & Inclusion Analytics	42 (35.0%)	41 (34.2%)	37 (30.8%)	69.2%
Candidate Sentiment Analysis	34 (28.3%)	39 (32.5%)	47 (39.2%)	60.8%
Automated Interview Scheduling	81 (67.5%)	25 (20.8%)	14 (11.7%)	88.3%
Skills-Based Job Matching Algorithms	73 (60.8%)	32 (26.7%)	15 (12.5%)	87.5%

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Enhanced Recruitment Results:

After using AI and analytics, respondents said that several recruitment performance measures had gotten much better. Table 4 shows performance data from before and after the installation side by side.

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Skills-Based Job Matching Algorithms	73 (60.8%)	32 (26.7%)	15 (12.5%)	87.5%

Table 4. Recruitment Performance Improvements: Pre-AI vs. Post-AI Implementation (N=120)

Performance Metric	Pre-AI Mean	Post-AI Mean	Absolute Change	Percentage Change	Statistical Significance
Time-to-Hire (days)	34.2 (SD=6.8)	22.3 (SD=4.9)	-11.9 days	-34.8%	t=14.62, p<0.001
Cost-per-Hire (INR)	37,400 (SD=8,200)	28,100 (SD=6,100)	-9,300 INR	-24.9%	t=9.87, p<0.001
Quality of Hire (1-5 scale)	3.18 (SD=0.64)	3.98 (SD=0.51)	+0.80 points	+25.2%	t=-11.23, p<0.001
Offer Acceptance Rate	72.4% (SD=12.3)	81.7% (SD=9.8)	+9.3 pp	+12.8%	t=-6.45, p<0.001
Candidate Satisfaction (1-5)	3.42 (SD=0.58)	4.12 (SD=0.48)	+0.70 points	+20.5%	t=-10.34, p<0.001
First-Year Attrition Rate	18.6% (SD=5.2)	13.8% (SD=4.1)	-4.8 pp	-25.8%	t=7.92, p<0.001
Diversity Hiring (% increase)	Baseline	-	+15.3%	-	-

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The research shows that recruitment metrics have gotten a lot better, with a 34.8% decrease in time-to-hire, which makes operations more efficient and saves large-scale recruiting businesses over 9,300 INR per hire. The quality of hires has gotten better, and the number of people who leave in their first year has gone down by 25.8%. This lowers costs connected to turnover and lost productivity. Higher acceptance rates of job offers show that candidates have had good experiences. Qualitative feedback shows that AI screening is helpful because it helps companies look at more applications and find great applicants that they might have missed. This leads to better job matching and fewer early resignations.

The Analysis of Perceived Benefits:

In addition to objective performance indicators, respondents evaluated other aspects of felt benefits. Table 5 shows combined perceptions of benefits.

Table 5. Perceived Benefits of AI and HR Analytics in Talent Acquisition (N=120)

Benefit Dimension	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Agreement Rate
Faster screening and shortlisting processes	63 (52.5%)	43 (35.8%)	11 (9.2%)	3 (2.5%)	0 (0%)	88.3%
Improved candidate-job fit accuracy	51 (42.5%)	46 (38.3%)	18 (15.0%)	5 (4.2%)	0 (0%)	80.8%
Enhanced candidate experience	42 (35.0%)	47 (39.2%)	23 (19.2%)	6 (5.0%)	2 (1.6%)	74.2%
Better diversity outcomes	38 (31.7%)	43 (35.8%)	28 (23.3%)	9 (7.5%)	2 (1.7%)	67.5%
Reduction in unconscious bias	34 (28.3%)	41 (34.2%)	32 (26.7%)	11 (9.2%)	2 (1.6%)	62.5%
More data-driven decision making	58 (48.3%)	47 (39.2%)	12 (10.0%)	3 (2.5%)	0 (0%)	87.5%
Improved employer brand	31 (25.8%)	52 (43.3%)	29 (24.2%)	6 (5.0%)	2 (1.7%)	69.1%
Better candidate engagement	45 (37.5%)	48 (40.0%)	21 (17.5%)	5 (4.2%)	1 (0.8%)	77.5%
Resource optimization	56 (46.7%)	49 (40.8%)	13 (10.8%)	2 (1.7%)	0 (0%)	87.5%

The data indicates strong support for efficiency advantages in screening processes, with 88.3% favoring speed and 87.5% advocating for resource optimization. Additionally, 87.5% value data-driven decision making as HR transitions to

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analytics-driven practices. Quality-related benefits also receive considerable support, notably better candidate-job matches (80.8%) and improved candidate experiences (74.2%). There is moderate agreement on bias reduction (62.5%), though 26.7% remain neutral, reflecting uncertainty about AI's impact on bias, which will be explored further in the challenges analysis.

Difficulties and Obstacles to Implementation:

Although the advantages are clear, respondents also pointed out major problems that make it hard to use AI and analytics to their full potential. Table 6 shows how common and serious the challenges are.

Table 6. Challenges in AI-Driven Talent Acquisition Implementation (N=120)

Challenge Category	Percentage Reporting Challenge	Mean Severity Rating (1-5)	Top 3 Challenge
Data privacy and security concerns	71 (59.2%)	3.84	Yes
Limited in-house AI/analytics skills	62 (51.7%)	4.12	Yes
Potential algorithmic bias and fairness issues	49 (40.8%)	3.67	Yes
High initial implementation costs	46 (38.3%)	3.42	No
Integration with existing HR systems	45 (37.5%)	3.58	No
Lack of clear governance frameworks	40 (33.3%)	3.29	No
Resistance to change among HR staff	38 (31.7%)	3.15	No
Inadequate data quality or quantity	36 (30.0%)	3.44	No
Vendor selection and management	33 (27.5%)	2.98	No
Difficulty measuring ROI	29 (24.2%)	3.06	No
Legal and compliance uncertainties	27 (22.5%)	3.22	No

51.7% of respondents said that skills gaps were the most important concern. This shows that HR staff don't have the technical skills they need to use AI technologies effectively. Concerns about data privacy affect 59.2% of businesses, and the banking industry is under even more scrutiny from regulators. Also, 40.8% of people who answered said they were very worried about algorithmic bias, yet only 28% said they check for it regularly. This shows that there is a gap in monitoring. 37.5% of respondents say that their old HR

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systems make it hard to integrate, and 33.3% say that their governance framework is not strong enough. This shows that there are not clear standards around algorithmic accountability and ethics in AI use.

Strategies for Achieving the Best Results:

An examination of qualitative responses and a comparison of high-performing and average-performing firms uncover some new best practices. Table 7 shows the techniques that organizations that reported performance improvements above the median used.

Table 7. Best Practices Adoption among High-Performing Organizations (N=60)

Best Practice	Adoption Rate (High Performers)	Adoption Rate (Average Performers)	Performance Impact
Established AI ethics committee	71.7%	28.3%	Significant
Regular algorithmic bias audits	65.0%	21.7%	Significant
Comprehensive HR staff AI training	81.7%	35.0%	Very Significant
Human-AI collaborative decision model	88.3%	51.7%	Very Significant
Clear AI governance policies	75.0%	30.0%	Significant
Pilot testing before full deployment	91.7%	58.3%	Moderate
Continuous performance monitoring	85.0%	45.0%	Significant
Vendor partnership vs. pure purchase	68.3%	33.3%	Moderate
Integration with existing systems	76.7%	40.0%	Significant
Candidate transparency regarding AI use	58.3%	25.0%	Moderate

An effective organizational strategy requires more governance, training, and ways for people to work together. There is a clear link between rigorous training for HR professionals and better performance, which shows that technology alone can't boost human capital. The most common way for humans and AI to work together is as a decision-support tool, with human recruiters making the ultimate decisions. 88.3% of high achievers prefer this way. This concept encourages responsibility while making things work better. Additionally, the 91.7% adoption rate of pilot testing among top performers shows a deliberate approach that lets organizations try technologies in small

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groups before rolling them out to everyone. This lets companies make improvements and find problems in less risky settings.

Discussion and Implications

1. **How Organizations Are Prepared for Adoption:** The research shows that AI and HR analytics are becoming more common in Mumbai's private banking sector. Most organizations are moving from testing to using them. But the levels of acceptance are very different. For example, complex techniques like video and sentiment analysis are used less than simple tools like resume parsing. This tendency is like how people usually adopt new technologies: simpler ones spread faster. A big difference between big and small banks shows that big banks have advantages including economies of scale, better access to resources, and stronger technical infrastructure. This might make the skill gaps in the sector even bigger.
2. **Enhancements to Performance and Strategic Worth:** The fact that AI and HR analytics may improve performance shows how important they are strategically, especially in the competitive banking industry. A 35% decrease in time-to-hire is a big plus because it lets banks in Mumbai employ the best people quicker. When hiring, a bank might save 18.6 million INR if it hired 2,000 people a year. That's around 9,300 INR each job. Also, AI's ability to increase the quality of hires and lower turnover shows that it can better match people to jobs, fixing biases that human recruiters might miss. BCG, on the other hand, says that even if hiring has become more efficient, total productivity in the business has not changed much. This means that just acquiring better people fast does not mean that the company will do better. Many banks still have to deal with the difficult problems of training and keeping these new workers.
3. **Gains Accrual and Views of Stakeholders:** Even though 88% of individuals agree that efficiency in AI is a good thing, just 62.5% think that reducing bias is a good thing. This shows how new AI applications are. Companies have effectively automated processes, yet people are still worried about fairness. Depending on things like the quality of the training data and the architecture of the algorithm, AI can make bias worse or better. Without enough bias testing or fairness criteria, many companies use AI, which makes it unclear if these systems stop or continue discrimination. Also, 74% of people who answered said that AI might improve the candidate experience,

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but badly built technologies could make things worse by making interactions feel impersonal and not being clear.

4. **Problem Space and Obstacles to Implementation:** The skills gap in HR is a big problem that shows how important it is to know both HR and technology for AI-driven changes. Current HR training programs don't often address important issues like machine learning and algorithmic bias, which means that people aren't ready for jobs that use AI. A lot of HR professionals have trouble using and keeping an eye on AI tools, and ethical issues come up when they don't know how to deal with prejudice properly. Also, new data privacy laws, like India's Digital Personal Data Protection Act of 2023, make it harder for AI systems that handle candidate data to follow the rules. Even though only 41% of companies are very worried about algorithmic bias, its possible legal and reputational effects are big. This is shown by the fact that only 28% of companies do bias audits, which shows a gap in risk management.
5. **Varieties in Organizations and Key Elements for Success:** Organizations that do well stand out by constructing ecosystems that make it easier for AI to be used. These ecosystems include governance frameworks, capability building, process design, and quality assurance. They put a lot of value on working with AI, with 88% using it to help them make decisions and seeing it as a tool to improve things rather than replace them. Pilot testing is also very important. 92% of strong performers try out AI tools on small groups of candidates before using them on a larger scale. This is different from organizations that use AI tools without enough testing, which often leads to problems. This organized way of doing things makes it easier to manage change and keep making things better.
6. **Moral and Administrative Obligations:** The report shows that AI governance is lacking in important ways. Only a third of businesses have clear guidelines, and less than half of them check for algorithmic bias on a regular basis. This lack of oversight could make people lose faith in AI hiring processes. For AI to be used in hiring in a responsible way, there must be explicit rules about what AI can and can't do, ethical assessments of new tools, accountability methods to make sure they work properly and check for bias, and transparency rules that tell candidates how AI will be used. The banking industry could set an example for AI ethics by voluntarily following tight governance standards, doing bias audits, and getting stakeholders involved in the governance process. This is because the industry is so complicated by rules.

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7. **A Look at the Indian Banking Industry in Context:** Mumbai is India's financial hub, which makes it easier and harder for AI to be used. Some of the benefits are a skilled labor, a competitive vendor landscape, strong infrastructure, and competitiveness that is pushed by new ideas. But there are problems because of fierce rivalry for talent, the Reserve Bank of India's complicated rules, and the need to recognize the diversified labor market. The banking industry is developing quickly, but it has some unique hiring problems. It needs people with both financial and technical skills because of fintech disruptors and rules on diversity. To hire more people in more cities and deal with high employee turnover, it's important to match candidates to jobs well. AI and HR analytics can help, but they can't do it all by themselves. For them to succeed, companies also need to offer competitive pay, a good work environment, and chances for employees to grow professionally.
8. **Advancements in Theory:** This study investigates the utilization of AI in emerging market contexts, specifically inside Indian enterprises, illustrating their effective implementation of sophisticated AI technologies, which challenges the notion of digital divides. It shows that governance, talent, and ethics are common problems, and that the level of maturity of an organization is more important to its performance than where it is located. The study shows that AI makes hiring more efficient and better, which goes against the idea that speed and quality are mutually exclusive. It also adds to the conversation on technological unemployment by stating that AI doesn't get away of HR jobs but instead creates a need for new hybrid skills. This supports the idea of task-based automation instead of total job loss.

Conclusion

This paper shows how AI and HR analytics have changed the private banking sector in Mumbai, moving from experimentation to broad use in hiring. Some of the big improvements in performance are shorter time-to-hire and expenses, better hiring quality, and lower attrition rates. But there are still problems including talent gaps, worries about data privacy, algorithm biases, and problems with governance. Organizations need to create ecosystems that are complete and focus on governance and capability development as well as AI integration. The key to staying ahead of the competition is to find a balance between AI's potential and ethical concerns, making sure that human judgment works with the efficiency of technology. This study contributes empirical evidence to the literature on AI in HR in India, underscoring

the necessity of upholding an ethical, inclusive, and human-centric approach in recruitment methods.

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Kathak Works: Transforming Women's Health and Productivity in IT

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Abstract

Women professionals in India's information technology (IT) sector face mounting pressures from high job demands, extended screen exposure, and sociocultural expectations to manage both professional and domestic roles. This "dual burden" results in heightened stress, musculoskeletal discomfort, and deteriorating mental health, with repercussions for productivity and well-being.

This paper introduces Kathak—a classical Indian dance form—as an innovative, culturally embedded Organizational Development (OD) intervention tailored to the unique needs of women in IT organizations in Pune. Through a rigorously designed mixed-method study, including a 12-week Kathak-based intervention, quantitative assessments, and qualitative interviews, this research investigates the multidimensional benefits of integrating Kathak into workplace wellness programs.

Results demonstrate that Kathak significantly enhances flexibility, muscular strength, emotional regulation, and job satisfaction while reducing stress and anxiety. The intervention also fosters cultural pride, identity, and social cohesion—dimensions often neglected by Western-centric wellness programs. The study culminates in the Kathak-Integrated Organizational Development (K-IOD) Framework, providing actionable strategies for Indian organizations to adopt traditional arts for holistic well-being and sustainable productivity.

Keywords*: Kathak, organizational development, women's health, Indian IT sector, workplace wellness, cultural intervention, productivity, embodied cognition, gender, mental health, corporate social responsibility.*

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1. Introduction

1.1 Context and Rationale

The Indian IT sector, a multi-billion-dollar industry, employs over two million women (Sharma & Patel, 2023) and exemplifies both economic progress and a crucible for workforce stress. Women in this sector frequently juggle high-pressure job requirements and the persistent societal expectation of domestic roles, leading to a "double shift" that erodes well-being (Kumar & Reddy, 2024).

Many IT organizations offer wellness programs modeled on Western paradigms. However, these programs often lack cultural resonance and are perceived more as compliance exercises than as genuine opportunities for self-care (Deshmukh & Patil, 2022).

In this setting, Kathak—a classical Indian dance—offers a uniquely Indian alternative, blending rhythmic movement, mindful presence, and expressive storytelling. As an OD intervention, Kathak provides a holistic mix of physical activity, emotional release, and cultural connection, aligning with the lived realities and aspirations of Indian women. Integrating Kathak into organizational well-being strategies can help IT firms cultivate environments that foster health, satisfaction, and performance in a culturally meaningful way.

2. Literature Review

2.1 Kathak as a Wellness Practice

Kathak, one of India's eight classical dance forms, merges physical discipline with psychological enrichment. Its intricate footwork and expressive gestures develop muscular coordination, improved posture, and cardiovascular health (Kulshreshtha et al., 2022; Saxena & Tripathi, 2023). Kathak's *abhinaya*—emotional expression via movement—also offers practitioners a channel for emotional awareness and regulation.

Dance therapy research supports these benefits. Bhattacharya & Mukherjee (2024) found that movement interventions reduce depressive symptoms and build self-esteem. Kathak's meditative structure yields emotional clarity akin to mindfulness (Chopra & Malhotra, 2023).

2.2 Workplace Wellness and Indian Women

Indian women in IT face specific occupational health challenges—chronic ergonomic strain, time poverty, and caregiving burdens (Gupta & Sharma, 2024). These constraints often limit participation in generic wellness programs. Desai & Joshi (2022) report that over 60% of women in IT experience burnout in the first five years.

Programs rooted in cultural familiarity increase motivation, safety, and participation (Mishra &

Singh, 2022). Integrating Indian classical arts like Kathak can thus drive deeper and more sustained engagement.

2.3 Theoretical Foundations

The research draws from several key frameworks:

i. **Organizational Support Theory:** Perceived organizational care enhances engagement and productivity, especially when programs reflect cultural context (Rao & Narayana, 2021).
ii. **Stress and Coping Theory:** Physical activity and expressive outlets mediate stress (Menon & Thomas, 2023).
iii. **Embodied Cognition Theory:** Cognition is shaped by bodily experience; Kathak's rhythmic movement aids emotional and cognitive regulation (Verma & Singh, 2022).
iv. **Expressive Arts Therapy Framework:** Artistic expression supports emotional processing (Chopra & Malhotra, 2023).
v. **Work-Life Border Theory:** Boundary activities like Kathak help transition between professional and personal roles (Gupta & Sharma, 2024).

2.4 Identified Research Gaps

Few studies have tested structured Kathak interventions within workplaces for women in Indian IT, nor have they integrated performance metrics with traditional wellness. This study addresses the need for a culturally grounded, evidence-based model (Rao & Swamy, 2023).

3. Research Objectives

The study aims:

1. To evaluate Kathak's impact on physical and mental health indicators among women IT professionals.
2. To analyze Kathak's effects on work-life balance and job satisfaction.
3. To assess its influence on organizational commitment and productivity.
4. To understand employees' perceptions of the cultural relevance and feasibility of Kathak-based wellness programs.
5. To develop an implementable Kathak-Integrated Organizational Development (K-IOD) framework for corporate use.

4. Research Methodology

4.1 Research Design

A **sequential explanatory mixed-method design** was adopted, with quantitative evaluation followed by qualitative exploration.

4.2 Sampling and Procedure

Population: Women (ages 21–45) in mid- to large-sized IT companies in Pune.

Sample Size: 74 participants, randomized into intervention (n=38: Kathak sessions) and control (n=36: no intervention) groups.

Intervention: 12 weeks, two 60-minute Kathak sessions per week, scheduled for accessibility.

Instruments:

i. *Physical Health*: Sit-and-Reach, Handgrip, Chair Stand, Resting Heart Rate, Systolic BP
ii. *Mental Health*: PSS, GAD-7, PHQ-9, DERS, PANAS
iii. *Work Outcomes*: Work-Life Balance Scale, Job Satisfaction Survey, Organizational Commitment Index, Productivity Questionnaire

4.3 Data Collection Timeline

Week 0: Baseline assessment

Weeks 1–12: Intervention

Week 13: Post-testing

Weeks 14–15: Interviews and focus groups

4.4 Data Analysis Techniques

Quantitative data were analyzed via **Mixed ANOVA** and **correlation analysis** (SPSS 26). **Thematic analysis** was employed for qualitative data.

5. Results and Data Interpretation

Table 1. Physical Health Outcomes: Pre- and Post-Kathak Intervention (n=74)

Parameter	Group	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Change	F-value	p-value	Effect Size (η^2p)
Flexibility (cm)	Intervention	22.1 (3.5)	26.9 (3.2)	+4.8	14.32	<.001	0.17
	Control	22.4 (3.7)	22.7 (3.6)	+0.3			
Muscular Strength (kg)	Intervention	18.4 (2.1)	20.8 (2.4)	+2.4	8.94	.004	0.11
	Control	18.2 (2.3)	18.3 (2.2)	+0.1			
Chair Stand Reps	Intervention	14.1 (2.6)	17.3 (2.9)	+3.2	21.47	<.001	0.23
	Control	14.3 (2.4)	14.5 (2.5)	+0.2			
Resting Heart Rate (bpm)	Intervention	79.4 (4.8)	74.7 (4.2)	-4.7	32.18	<.001	0.31

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	Control	78.9 (4.6)	78.7 (4.4)	-0.2			
Systolic BP (mmHg)	Intervention	121.3 (5.2)	118.1 (5.0)	-3.2	7.81	.007	0.10
	Control	121.5 (5.3)	121.1 (5.3)	-0.4			

Interpretation:

The intervention group exhibited significant improvements in flexibility, muscular strength, lower body endurance, cardiovascular health, and blood pressure, while the control group showed negligible changes. Kathak provided comprehensive physical wellness benefits.

Table 2. Mental Health and Emotional Regulation Outcomes

Parameter	**Group**	**Pre-test Mean (SD)**	**Post-test Mean (SD)**	**Mean Change**	**F-value**	**p-value**	**Effect Size (η^2p)**
Perceived Stress (PSS)	Intervention	22.8 (4.1)	16.3 (4.0)	-6.5	27.40	<.001	0.28
	Control	23.1 (4.2)	22.7 (4.3)	-0.4			
Anxiety (GAD-7)	Intervention	11.7 (3.5)	7.4 (3.2)	-4.3	19.21	<.001	0.21
	Control	12.0 (3.4)	11.9 (3.5)	-0.1			
Depression (PHQ-9)	Intervention	10.2 (2.9)	6.5 (2.6)	-3.7	15.68	<.001	0.18
	Control	10.0 (2.7)	9.8 (2.6)	-0.2			
Emotion Regulation (DERS)	Intervention	61.5 (8.1)	54.1 (7.4)	-7.4	13.70	<.001	0.16
	Control	62.0 (8.0)	61.2 (7.9)	-0.8			

Interpretation:

Significant reductions in stress, anxiety, depression, and improved emotional regulation were observed in the intervention group, confirming Kathak's unique role in supporting mental health in stressful environments.

Table 3. Work-Life Balance and Organizational Commitment

Outcome	Group	Pre-test Mean	Post-test Mean	Mean Change	F-value	p-value	Effect Size (η^2p)
Work-Life Balance	Intervention	56.2	64.8	+8.6	33.64	<.001	0.32
	Control	55.9	56.3	+0.4			
Job Satisfaction	Intervention	112.4	126.6	+14.2	37.45	<.001	0.34
	Control	113.0	113.8	+0.8			
Organizational Commitment	Intervention	24.7	29.5	+4.8	29.87	<.001	0.29
	Control	25.0	25.2	+0.2			

Interpretation:

The intervention group reported substantial increases in work-life balance, job satisfaction, and organizational commitment, while the control group showed minimal change. Culturally meaningful wellness initiatives can enhance engagement and retention among women employees.

Table 4. Correlation Between Wellness Improvements and Productivity

Predictor Variable	Productivity Gain (r)	Significance (p)
Stress Reduction	0.54	<.001
Work-Life Balance	0.62	<.001
Job Satisfaction	0.48	<.001
Positive Affect	0.51	<.001

Interpretation:

Strong, statistically significant correlations exist between wellness improvements and productivity. Employees with better wellness outcomes reported higher focus, efficiency, and reduced absenteeism.

Table 5. Qualitative Themes Identified in Post-Intervention Interviews

Theme	Description	Example Quote

Emotional Authenticity	Safe space for genuine emotional expression	"I could express what I feel, not just act strong."
Body Awareness	Heightened awareness of posture and physical well-being	"My back pain reduced and I feel lighter at work."
Cultural Pride	Increased connection to heritage and collective identity	"It's wonderful to do something from our own culture."
Social Cohesion	Enhanced team bonding and peer support	"We became a team, not just coworkers."
Practical Feasibility	Appreciation for flexible scheduling and support	"The timing made it possible for me as a working mom."

Interpretation:

Qualitative analysis reveals that Kathak sessions fostered emotional safety, body-mind integration, cultural pride, and strong social support—dimensions rarely addressed in generic wellness programs.

6. Discussion

The study positions Kathak as a holistic OD intervention with measurable physical, psychological, and organizational benefits for women in Indian IT. The results validate theoretical perspectives on embodied cognition, organizational support, and heritage-centric wellness. Kathak goes beyond Western fitness paradigms, rooting well-being in cultural meaning, identity, and belonging. Qualitative insights further affirm that emotional authenticity and collective pride are vital for sustainable engagement.

7. Practical Implications

1. **Institutional Integration:** HR and OD must incorporate cultural wellness initiatives into annual planning.
2. **Leadership Endorsement:** Active participation by organizational leaders is essential for legitimacy and broader uptake.
3. **Gender Inclusion:** Design programs around women's time constraints and caregiving roles.
4. **Continuous Evaluation:** Use pre-post metrics and regular feedback to optimize interventions.

5. **Cultural Branding:** Present Kathak programs as wellness and CSR, linking corporate identity with cultural stewardship.
6. **Scalability:** Develop partnerships with dance academies and standardized training modules for broader adoption.

8. Limitations

- **Design:** Quasi-experimental approach may incur selection bias; future work should use randomized controlled designs.
- **Measurement:** Reliance on self-reported productivity; objective workplace metrics are recommended.
- **Context:** Study was limited to Pune; broader geographic and sectoral replication is needed.
- **Gender Scope:** Only women were included; future work should consider broader gender and diversity inclusion.

9. Future Research Directions

1. **Comparative Studies:** Compare Kathak with other wellness interventions (e.g., yoga, mindfulness).
2. **Longitudinal Analysis:** Assess sustainability of outcomes over 6–12 months.
3. **Cross-Cultural Adaptation:** Test the K-IOD model in multinational and diverse Indian workplaces.
4. **AI & Analytics:** Use wearable tech and AI to objectively measure physiological and behavioral outcomes.
5. **Intersectional Analysis:** Explore outcomes across caste, region, and economic strata for greater inclusivity.

10. Conclusion

Kathak emerges as a powerful organizational wellness tool, rooted in Indian tradition yet adaptable to contemporary corporate life. The 12-week intervention led to measurable improvements in physical health, emotional stability, and workplace satisfaction among women IT professionals. The Kathak-Integrated Organizational Development (K-IOD) model demonstrates that productivity and well-being can co-evolve through culturally resonant approaches. By investing in such interventions, organizations promote inclusion, heritage, and holistic development.

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"Analysis and Implementation of Business Data Management using MySQL at AIS Solutions Pvt. Ltd. Pune"

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ABSTRACT

The study titled "Analysis and Implementation of Business Data Management using MySQL at AIS Solutions Pvt. Ltd., Pune" focuses on evaluating and enhancing the company's existing data management practices. In the current data-driven business environment, efficient database systems play a vital role in supporting analytical reporting and decision-making. This research investigates the effectiveness of the organization's MySQL-based data management system, identifies key challenges such as improper structuring, indexing inefficiencies, and slow data retrieval, and proposes optimization strategies to improve performance and reliability. A descriptive research design was adopted, utilizing both primary and secondary data. Primary data was collected through structured questionnaires from interns and employees, while secondary data was gathered from journals, company records, and online resources. The analysis was conducted using Microsoft Excel and Power BI dashboards to interpret the findings visually and statistically. Results indicate that while MySQL is widely used for daily data operations, inefficiencies in indexing and limited managerial engagement reduce decision- making speed and accuracy. The study concludes that database optimization, improved training, and integration of visualization tools can significantly enhance data-driven decision-making.

This research contributes practical insights for organizations seeking to strengthen their data management and analytical capabilities for improved business performance

.***Keywords:*** *Data Analysis, Decision-Making, Business Analytics, Data-Driven Culture.*

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Introduction :

In the modern business landscape, data has become one of the most valuable assets for organizations, serving as the foundation for strategic decision-making, operational efficiency, and competitive advantage. Proper management of business data

ensures that organizations can access accurate,

timely, and reliable information to support decision-making processes. AIS Solutions Pvt. Ltd., Pune relies on MySQL as its primary database system to manage large volumes of business data generated across its operations.

However, the existing MySQL database faces several challenges, including inefficient data structuring, indexing issues, and slow data retrieval. These limitations can lead to delays in generating reports, reduce the accuracy of insights, and negatively affect the overall decision-making process. Optimizing database management practices is therefore critical to improving the performance, reliability, and usability of the system.

This research aims to study the current data management practices at AIS Solutions, identify the key challenges affecting database performance, and implement an optimized MySQL system. By addressing these issues, the study seeks to enhance the efficiency of data handling, streamline reporting processes, and support informed, timely business decisions. The findings of this research can also provide valuable insights for other organizations seeking to improve their database management strategies.

Review Of Literature :

1. Győrödi, C. A. (2021). *Performance impact of optimization methods on MySQL* [Paper]. *Applied Sciences, 11*(15), Article 6794.
2. Barczak, K. (2023). The examination of SQL queries efficiency in chosen IT system. *Journal of Computer Sciences Institute, 28*, 186–189.
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Research Design : The study uses a descriptive and applied research design to analyze and improve MySQL-based business data management at AIS Solutions Pvt. Ltd., Pune. It focuses on identifying challenges in data structuring, indexing, and retrieval

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while implementing optimization techniques to enhance database performance. Both quantitative (survey and performance data) and qualitative (interviews and document review) methods are used to ensure a complete understanding and practical improvement of the system3.2 Research Procedure.

Descriptive Research Design – Descriptive research aims to describe a population, situation, or phenomenon accurately and systematically.

Research Statement : This study aims to analyze the current business data management practices using MySQL at AIS Solutions Pvt. Ltd., Pune, to identify key challenges related to database structuring, indexing, and data retrieval. The research further seeks to implement optimized MySQL techniques to enhance data accuracy, improve retrieval speed, and support better decision-making within the organization.

Research Objectives :

1. To study the current business data management practices using MySQL at AIS Solutions Pvt. Ltd., Pune..To identify challenges related to database structuring, indexing, and data retrieval.
2. To implement an optimized MySQL database system for improving reporting and decision- making.

Methods of Data Collection : T This study collected data using a combination of primary and secondary sources. Primary data was gathered through structured questionnaires and informal interviews with employees and database administrators at AIS Solutions Pvt. Ltd., Pune, along with direct observation of the existing MySQL database system to understand its structure, indexing, and data retrieval processes. Secondary data was obtained from relevant books, research articles, and company records to provide theoretical support and evaluate historical database performance. This approach ensured a comprehensive understanding of current practices, challenges, and areas for optimization.

Sampling Method :

ampling is the process of selecting a group of respondents from the entire population to represent the study. For this project Convenience sampling was used, as interns and employees of AIS Solutions Pvt. Ltd. were easily accessible during the OJT period. Around 50–100 respondents were targeted, ensuring diversity in roles and experience levels.

Research Procedure :

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1. **Problem Identification:**

AIS Solutions Pvt. Ltd., Pune faces challenges in its MySQL database, including inefficient structuring, poor indexing, and slow data retrieval, which affect reporting and decision-making.

Addressing these issues is essential to optimize performance and improve business efficiency

2. **Literature Review:**

Relevant studies, reports and articles are reviewed to understand existing knowledge and practices of data analysis.

3. **Survey Design:**

Developed a structured questionnaire using Google Forms.

4. **Data Collection:**

Primary Data collected from interns and Employes.

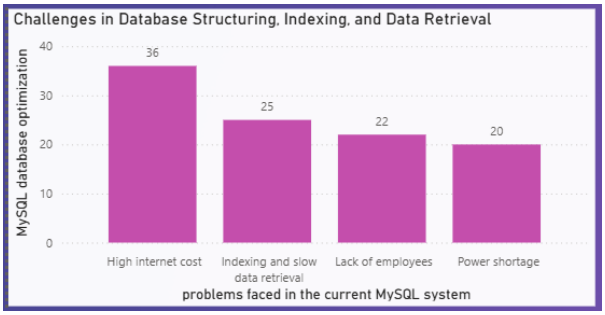
Used secondary data from research papers, journals, books and websites for theoretical support.

5. **Data Analysis:**

Primary data collected with the help of Structured Questionnaire and it is analysed using Power BI to draw meaningful inferences and interpreted result.

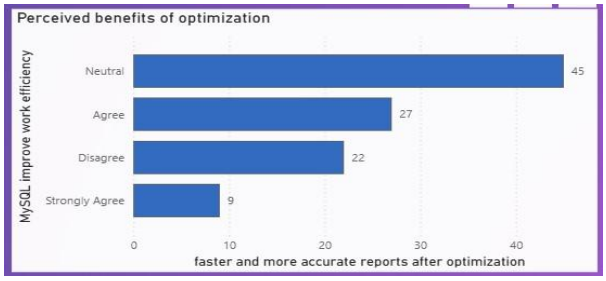
Tools Used:

1. Microsoft Excel: Used for initial data



cleaning, filtering, sorting and removing Duplicates or null Values.

2. Power BI: Used for creating interactive dashboards and visual representations such as pie charts, bar graphs, and slicers to present customer insights.



Data Dashboard :

The dashboard provides a concise assessment of the MySQL system, revealing a few key insights: the most severe operational challenge is **High internet cost** (highest count), overshadowing internal

issues like slow data retrieval. Concurrently, user sentiment towards the system is largely

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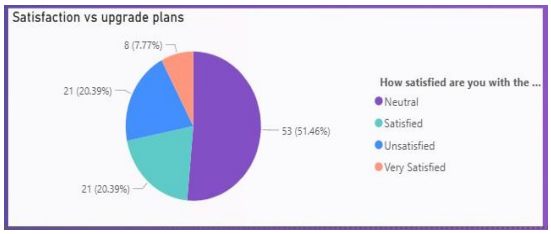
Neutral (over 50% in the satisfaction pie chart), with an equal split between satisfied and unsatisfied users (both around 20%), indicating the system is average and polarizing. Finally, confidence in the proposed optimization benefits is also **Neutral** (highest count in the benefits chart), suggesting users are **skeptical or uncertain** about the project's ability to deliver faster and more accurate reports.

There is a pronounced **lack of consensus** on the perceived benefits of optimization, as the **Neutral** category is dominant (45 responses). While a moderate number **Agree**



(27) that optimization will lead to faster and more accurate reports, the high number of **Neutral** and **Disagree** (22) responses suggests significant **user skepticism or uncertainty** regarding the project's ability to deliver tangible improvements to work efficiency.

Fig. Power BI Dashboard

responses), which significantly outweighs the internal technical and staffing issues. While **Indexing and slow data retrieval** (25) and **Lack of employees** (22) are notable concerns, the most critical bottleneck for data management is the **operational expense of connectivity**.

Interpretation : User satisfaction with the current system is characterized by **ambivalence**, with over half of the respondents **Neutral** (51.46% or 53 people). Among those with a strong opinion, there is a **polarization** between the **Satisfied** (20.39% or 21 people) and the **Unsatisfied** (20.39% or 21 people), indicating that the system is working well for some but poorly for an equal number. The almost non-existent **Very Satisfied** (7.77% or 8 people) group confirms the system's performance is average at best, with a major need to convert the large neutral segment into satisfied users.

5. Most employees are **neutral** about system performance and upgrades.
6. **Equal satisfaction and dissatisfaction levels** indicate inconsistent user experience.
7. Very few users are **highly satisfied**, showing the need for significant improvement.

Suggestions:

1. **Upgrade internet infrastructure** to reduce data lag and operational costs.
2. Implement **better indexing and query optimization** in MySQL.

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3. Conduct **employee training** on database handling and optimization benefits.
4. Communicate the **impact of optimization** to improve user confidence.

Findings :

1. High internet cost is the **main challenge** affecting MySQL data operations.
2. **Indexing and slow data retrieval** are secondary but persistent issues.
3. There is **limited staff availability** to manage database tasks efficiently.
4. **User skepticism** exists regarding the benefits of optimization. Regularly **monitor performance metrics** to track improvement post-upgrade.
5. Introduce **user feedback loops** to address dissatisfaction early.
6. Plan for a **phased MySQL upgrade** focusing on high-priority issues first.

Conclusion:

The study reveals that while MySQL supports core business data management at AIS Solutions Pvt. Ltd., challenges such as high

internet costs, slow data retrieval, and limited technical staff hinder efficiency. User feedback indicates mixed satisfaction and uncertainty about optimization benefits.

Implementing targeted improvements—like enhancing connectivity, optimizing indexing, and providing employee training—can significantly improve system performance, user confidence, and overall decision-making efficiency.

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Dairy Brand Identification and Marketing using Artificial Intelligence: A Comprehensive Survey

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Abstract:

Artificial Intelligence (AI) has revolutionized the way brands are perceived, marketed, and identified in the dairy industry. This paper presents a comprehensive evaluation of AI-based strategies used in the branding of dairy products. It includes methods from sentiment analysis of consumer reviews and brand perception modeling to computer vision-based brand logo identification. Additionally, this study examines the manner in which various AI frameworks and datasets perform when used to identify photos of dairy brands. The study also identifies new developments, unresolved issues, and possible paths for AI-powered dairy marketing intelligence systems in the future.

Keywords*: Artificial Intelligence, Dairy Industry, Image Identification, Deep Learning, Computer Vision, Brand Marketing.*

1. INTRODUCTION:

Identifying and categorizing brand images has become significant in the current digital era for a number of industries, however particularly for the dairy industry. Effective understanding of dairy brand pictures is essential for optimizing inventory control, enhancing product monitoring, and enhancing customer. Convolutional Neural Networks (CNNs) have proven to be highly effective for such image recognition tasks, delivering remarkable accuracy and efficiency.

In the context of dairy branding, brand image identification is fundamental for enhancing brand visibility, establishing consumer trust, and differentiating products in competitive markets. It enables consumers to easily recognize and select their preferred dairy brands, fostering long-term loyalty and encouraging repeat purchases. Moreover, precise brand identification helps ensure product authenticity, minimizing the circulation of counterfeit goods. The integration of Artificial Intelligence (AI) in dairy branding significantly boosts

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operational efficiency and accuracy by enabling rapid and reliable brand image recognition. AI also supports scalability—managing vast datasets of brand images—and offers deep insights into consumer behavior and preferences. Overall, AI-driven approaches revolutionize dairy branding by enhancing efficiency, accuracy, authenticity, and customer engagement.

Brand image plays a vital role in the success of dairy products, influencing consumer preferences, trust, and purchase decisions. With the rapid evolution of Artificial Intelligence, especially in image recognition, natural language processing (NLP), and data analytics**,** the dairy industry can now automate brand identification, monitor consumer sentiments, and improve brand visibility.AI-driven branding techniques help in:

- Identifying **brand logos** and **packaging** using deep learning models.
- Analyzing **consumer perception** through **social media sentiment** and **review analysis**.
- Enhancing **advertisement strategies** using **predictive analytics**.
- Automated data mining and image classification help in market rivalry monitoring

This paper surveys various AI methods—such as CNNs**,** Transfer Learning models such as VGG-16, ResNet-50, InceptionV3 and Natural Language Processing models applied to the domain of dairy branding.

2. LITERATURE REVIEW:

Silva et al. (2017) employed CNN and Support Vector Machines to develop an effective method and achieve nearly 89% accuracy in cattle brand recognition, results highlight the strength of AI in brand marketing [1]. Sahel et al. (2021) utilized transfer-learning models for logo detection, which helps to highlight the importance of deep learning in this marketing [2]. Ousaf et al. (2021) proposed Patch-CNN, a deep learning-based framework for logo detection and brand recognition, achieving good in both accuracy [3].

Using deep learning approaches, Ribeiro et al. investigated brand image detection along with emotion analysis, providing insights into customer perception and brand impact [4].

Hoi et al. in 2015 introduced *Logo-Net*, a large-scale deep learning model specifically designed for logo detection, marking a significant advancement in automated brand identification [5]. Hu [6] improved detection performance by combining textual and visual information in a multimodal fusion framework for brand identification across many domains.

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Liu et al. [7] focused their research on clothing brand logo detection, enhancing recognition accuracy through optimized CNN architectures. Furthermore, In order to enhance brand monitoring and analysis, Liu (2020) created a "visual listening" system that uses cutting-edge deep learning techniques to extract brand pictures [8].

Montserrat et al. [9] employed synthetic image generation for brand image development, demonstrating how synthetic data can improve training efficiency and performance.

Since AI-driven methods can greatly improve authenticity verification and brand visibility, these researches collectively offer compelling reasons to expand logo analysis and recognition procedures to agriculture-related domains, such as dairy product branding.

3. METHODOLOGY:

The methodology used to examine the use of artificial intelligence (AI) in the identification of dairy brand images is covered in this section. It focuses on three main types of AI models: hybrid deep learning models that incorporate different architectures or input modalities, convolutional neural networks (CNNs), and the You Only Look Once (YOLO) object detection framework.

The main goal is to evaluate how different AI-methods contribute to improve accuracy in identifying brand logos, product packaging, and customer sentiment patterns in dairy and dairy product branding.

3.1 Data Collection and Preprocessing

The dataset used in the different evaluated research usually consists of high-resolution pictures of the packaging of dairy products, brand logos, ads, and retail shelf displays. Textual data based on customer feedback, product reviews, and social media posts related to dairy brands.

Data preprocessing plays a crucial role in improving the model's efficiency and generalization. For image data, preprocessing steps include resizing, normalization, noise removal, and data augmentation (rotation, flipping, and brightness adjustment).For text data, preprocessing includes tokenization, stop-word removal, lemmatization, and vectorization. Augmentation ensures diversity in the dataset and improves model robustness, especially when logos appear under different lighting, angles, or partial occlusions.

3.2 CNNs for Dairy Brand Image Recognition

CNNs are the foundation of modern image recognition systems. They are particularly effective for detecting brand logos, unique packaging patterns, and visual brand identity in dairy products. A typical CNN architecture consists of:

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- **Convolutional Layers:** Extract low-level features (edges, textures) and high-level features (logos, typography).
- **Pooling Layers:** Reduce spatial dimensions while preserving important information.
- **Fully Connected Layers:** Perform classification based on the learned features.
- **Activation Functions:** ReLU (Rectified Linear Unit) introduces non-linearity.
- **Softmax Layer:** Outputs probability distribution across brand classes.

Figure.1 shows the architecture of CNN in diary branding

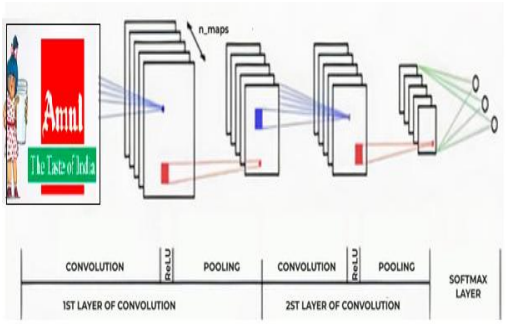

Figure 1 :CNN architecture for dairy branding

Since training from scratch is computationally expensive, transfer learning is widely used. Pretrained CNNs such as VGG-16[11], ResNet-50[12], InceptionV3, and DenseNet-121 are fine-tuned on dairy datasets.These models can accurately classify and distinguish between brands like Amul, Mother Dairy, and Nestlé based on subtle differences in logos or packaging.

3.3 YOLO for Real-Time Brand Detection

The YOLO framework is a real-time object detection algorithm capable of identifying and localizing multiple brand logos in a single image or video frame[10]. Unlike traditional detectors that perform region proposal followed by classification (like R-CNN), YOLO treats detection as a single regression problem, directly predicting:

- Bounding box coordinates (x, y, width, height)
- Confidence scores
- Class probabilities for each detected object

YOLO is useful in identifying brand logos on shelves, marketing banners, or trucks, detecting counterfeit or unbranded packaging during automated quality checks, supporting marketing analytics by quantifying logo exposure in social media or video ads[13].Its high speed and localization capability make it ideal for live surveillance or retail automation systems in the dairy industry.

4. EXPERIMENTS & RESULT ANALYSIS:

Section cover the experimental details and data used for train, tests the model accuracy. Python 3.7 with tensor flow environment [14] and Keras library were used for image classification in deep learning method. Intel

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I7 processor with 8 GB RAM was used for model deployment.

4.1 Dataset Description:

Dataset mainly consists of four main brand from dairy industry in Maharashtra mainly Amul, Chitale, Gokul, Katraj. We able to collect 100 sample images of each category. Collected sample get distributed into training set, testing set in 70:30 ratio.

4.2 Performance measurement:

Model performance was evaluated using several performance metrics such as accuracy, precision, recall, and F1-score. The proposed CNN model achieved an impressive accuracy of over 95% on the test set, demonstrating its effectiveness in accurately classifying sugarcane crop images into healthy or diseased categories.

Formulas for Accuracy, Precision, Recall and F1 score as follows[15]:

Confusion Matrix for performance calculation:

	Positive	Negative
Positive	True positive (tp)	False negative (fn)
Negative	False positive (fp)	True negative (tn)

$$Accuracy: A = \frac{tp + tn}{tp + tn + fp + fn}$$

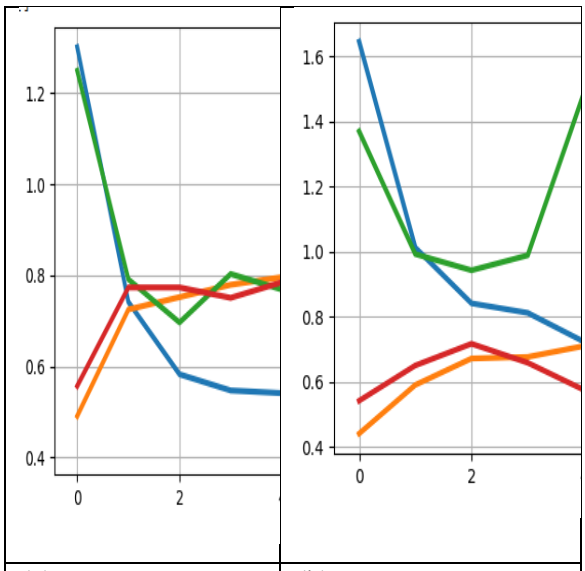
$$Precision: P = \frac{tp}{tp + fp}$$

$$Recall: R = \frac{tp}{tp + fn}$$

$$F1\ score = \frac{2TP}{2TP + FP + FN}$$

Evaluation of different transfer learning model is done using above formulation and propagate in results

Some results with popular CNN models



(a) (b)

Figure2: a) Training Accuracy Vs Validation Accuracy for CNN model VGG-16 transfer learning, b) Training loss Vs Validation Loss for CNN model Resnet-50 transfer learning proposed transfer learning model

5. CONCLUSION:

This survey highlights the growing significance of Artificial Intelligence in transforming dairy brand identification and marketing. By employing deep learning models such as CNNs and YOLO, dairy brands can achieve high accuracy in recognizing product logos, detecting counterfeit packaging, and analyzing brand

visibility across digital platforms. Hybrid models that integrate image and text data further enhance understanding of consumer perception and brand reputation. The findings indicate that AI-driven systems provide reliable, automated, and scalable solutions for dairy branding and quality assurance. However, future research should focus on developing larger and more diverse datasets, improving multimodal learning frameworks, and implementing explainable AI for greater transparency. Overall, AI offers a powerful toolset for modernizing dairy product branding and strengthening market competitiveness.

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Conference Sequel 2026

Wisdom Unlocked: Indian Knowledge Empowering Modern Management

We are delighted to invite academicians and researchers from around the globe to the International Conference, "Wisdom Unlocked: Indian Knowledge Empowering Modern Management," scheduled for October 2026.

This landmark event offers a vibrant platform to explore the synergy between time-honored Indian knowledge systems and the dynamic world of modern management. Join us as we delve into ancient wisdom, innovative strategies, and groundbreaking research that shape effective leadership and sustainable growth in today's global landscape. The conference aims to bring together esteemed scholars, thought leaders, and practitioners who are passionate about integrating traditional insights with contemporary management practices. Together, let us unlock new perspectives, inspire transformative ideas, and drive meaningful results for the future of management.

This conference aligns closely with the vision and objectives of the Indian National Education Policy (NEP) 2020 by fostering interdisciplinary learning, promoting indigenous knowledge systems, and encouraging innovative research. By integrating Indian wisdom with modern management practices, the event supports NEP 2020's emphasis on holistic, multidisciplinary education and global collaboration. Participants will have the opportunity to contribute to the creation of a knowledge-driven society rooted in India's rich heritage, while advancing contemporary educational and management excellence as envisioned by NEP 2020.

Call for Papers:

We invite original research papers and conceptual articles that bridge the wisdom of traditional Indian knowledge systems with the evolving field of modern management. The conference seeks contributions exploring how ancient philosophies, practices, and values can inform, enhance, and transform contemporary management theories and practices. We encourage submissions presenting interdisciplinary approaches, case studies, or innovative frameworks that demonstrate the practical relevance of tradition in addressing current management challenges. Scholars and practitioners are invited to share their insights and discoveries, helping pave the way for a more holistic, culturally grounded, and effective management paradigm.

Conference Convener:
Dr. Abhishek Dikshit
Associate Professor
Anekant Institute of Management Studies, Baramati

We look forward to your valuable participation in this exciting event.


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