



**An Edited Book on**

**An Advance Multidisciplinary  
Approach to Management,  
Education, Technology, and Science**

**DR. KUMARDATT A GANJRE**

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AN ADVANCE  
MULTIDISCIPLINARY  
APPROACH TO MANAGEMENT,  
EDUCATION, TECHNOLOGY,  
AND SCIENCE

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DR. KUMARDATT A GANJRE



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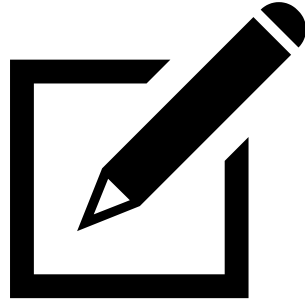
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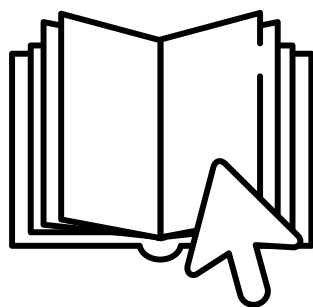


# Preface

The textual content of this book is regularly revised and updated, integrating significant feedback from students and faculty members, as well as our own intuitions and judgments. Our goal is to include innovative content and elements into the book, regardless of whether the subject matter is deemed fundamental or emerging. In this edited book have included more in-depth evaluations of the key categories in the field of social science and their importance in the context of cross-functional strategic planning. In addition, we have incorporated the most up-to-date techniques in psychographic and geodemographic segmentation, together with valuable knowledge.

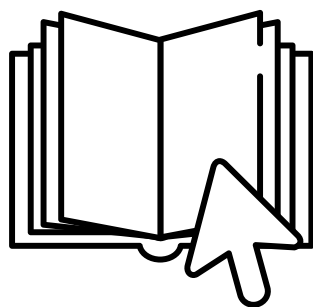
This edition has integrated over 10 + social science concepts. Furthermore, its objective is to assist in the completion of writing projects and case presentations. Each resource has been meticulously selected to meet the specific needs of prospective students. The aim of our endeavor is to provide a variety of instructional materials that may be easily accessed by students studying social science at various levels, while considering the wide range of undergraduate and postgraduate programs available.

**Dr. K A Ganjre**



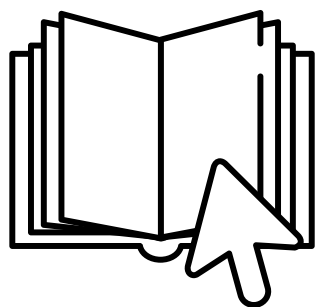
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**“Various Innovative Challenges and Uncertainties in The Rapidly  
Developing E-Commerce Sector In India”**

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**Abstract :**

*E-commerce has immensely increased economic growth in domestic welfare and changes have arisen in the market scenario too. India, being a rapid adaptor of technology is apace with the current scenario of electronic data exchanges and has taken to e-commerce. In view of this, this article tries to present a snapshot of the evolution of e-commerce business indicating the chronological order, category of e-commerce business, description of organizations involved in e-businesses in India, key characteristics of the firms engaged in e-commerce application, to examine the growth of e-commerce in both physical and financial terms, to evaluate the benefits obtained from e-business, to critically analyze the barriers and constraints involved in flourishing e-commerce businesses in India and finally to develop a framework for effective dissemination of e-commerce in India.. The trade negotiations on the fundamental key domestic policies, particularly in telecommunications, financial services, and distribution and delivery have significant important in economic growth. The e-commerce technology and the usage of online shopping have increased domestic economics tremendously in India. This paper is an attempt to study and identify the factors influencing the growth of e-commerce and report the various issues faced in the e-commerce growth. With advancements in technology, there have been changes in the methodology for business transactions.*

**Keywords:, Cyberspace, online Shopping, E commerce, Platform for Privacy Preferences,**

## INTRODUCTION

Governments have formulated ICT strategies and set significant objectives to ensure the effective deployment and use of ICTs for the benefit of the enterprises and the citizens in the developing countries. A common definition of e-commerce is to provide trade processes through data interchange, transaction of goods and services via computer networks such as the Internet.

Electronic commerce is presently an indispensable ingredient of India's trade facilitation policy. Since 1991, after economic reforms explicitly took place in India as a result of opening of the economy with a view to integrate itself with the global economy, the need to facilitate international trade both through policy and procedure reforms has become the foundation stone of India's trade and fiscal policies. Resultantly, last few years have witnessed a technological revolution accompanied by the wide spread use of the Internet, web technologies and their applications. Electronic commerce (e-commerce) as part of the information technology revolution became widely used in the world trade in general and Indian economy in particular. As a symbol of globalization, e-commerce represents the cutting edge of success in this digital age and it has changed and is still changing the way business is conducted around the world.

The primary purpose of this study is to examine and uncover the impact of e-commerce and also identify the issues and areas important to the implementation of e-commerce that may help in enhancing the productivity in the economic growth of the country.

### PRESENT CONDITION OF E-COMMERCE IN INDIA

According to the survey by industry body Assoc ham (The Associated Chambers of Commerce and Industry of India), India's e-commerce market, which stood at \$2.5 billion in 2015, reached \$8.5 billion in 2018 and rose 88% to touch \$16 billion in 2013[6]. The survey also estimated that the country's e-commerce market will soon reach \$56 billion by 2023 with the rise of online retail.

### **Frequency of Internet Usage in India The key drivers in Indian e-commerce growth are:**

1. ***Increased Usage of Internet*** - According to the Internet and Mobile Association of India (IAMAI), the Internet user base in the country stood at 190 million at the end of June 2013. With more and more people accessing the web through mobile phones, the Internet user base in the country is projected to touch 243 million by June 2014, a year-on-year growth of 28 per cent. The growth of Internet users has also led to

a substantial growth of other digital industries such as e-commerce and digital advertising.

2. ***Rising Educational Level in Computer*** - The Government of India has put new horizontal efforts in the education of tools and techniques of computer studies. The students of urban areas, rural areas and business persons are attracted towards the advance computer technologies. The development of educational standards has enabled a great demand in the market.
3. ***Busy Lifestyle*** - The powerful influence of various social media tools such as Pinterest or Facebook allows consumers to organize their favorite items and segment it into themed collections to share it with others. This fuels personal expression in shopping and makes others reflect on their purchase decision.
4. ***Rising middle class with disposable income*** - With the rise of small and medium enterprises, foreign direct investment, and India's own powerful multinational corporations creating millions of new jobs, a new generation of globally-minded Indian consumers has been created. With growing job opportunities the income sources have also increased. Because of high spending power, customers are willingly able to pay for the products online.
5. ***Awareness of Products*** - People are aware of the availability of various products in the markets through the help of television, newspaper, website etc. Hence the availability of a new product and its price and other features can be known easily.
6. ***Easy to Find the Review of Products*** - It is quite easy to find the review of products by the help of online shopping. E-commerce has made it simpler to get information regarding the product and the customers can purchase the products after getting reviews and feedback of the product.

**Fig 3: E-Commerce market growth in India [13]**

Let us now study the key market and technology trends in e-commerce which indirectly will lead to the increasing growth of e-commerce in India:

1. Online retailers would have to leverage technology to the fullest, and by developing

strategies through analytics produced using big data will help in making customers feel special and increase brand loyalty.

2. Cash on Delivery (COD) accounts for up to 60 per cent of transactions, according to Internet and Mobile Association of India.
3. The increasing adoption and use of Smartphone's enable businesses to collect large amount of data on consumers for utilization to do target-based marketing and advertising.
4. Product and service feedback via social media channels have an impressionable effect on the minds of the larger customer base.
5. It is necessary to create high quality and SEO-friendly ecommerce site for building long relationship with customers with exclusive content helps increase the profit volume ratio.
6. The service of providing 24 hours chat assistance to give instance response and guidance to customers has raised the quality of online shopping experience.

### **BASIC ISSUES IN E-COMMERCE**

#### **A. *Issues in E-Commerce - Business-With-Business***

There are some significant differences in the factors impeding adoption of electronic commerce by businesses and by consumers. The reasons for slow adoption in respect of commerce between business enterprises are -

##### *1) Impediments to Business-With-Business*

###### **□ Organizational matters:**

- organizational resistance to change of any kind;
- competing priorities for executive and management attention;
- communications difficulties among executives, managers and people with relevant technical expertise;

###### **□ Inter-organizational matters:**

- resistance against multiple, incompatible requirements being imposed by major industry players in so-called 'hub-and- spoke' schemes, which inevitably involve some degree of duress on their generally smaller 'business partners', and frequently involve proprietary protocols, and impose costs on the smaller business which are specific to a particular partner, rather than shared across many partners;

###### **□ Investment matters:**

- long cycles for re-investment in organizational infrastructure;

- competing priorities for financial resources
- limited apparent payback on the investment required;
- difficulties in establishing a compelling business case (e.g. the benefits from the investment would be likely to accrue to some party other than the investor);

□ **Technological matters:**

- inadequate infrastructure, technology or services;
- poor fit between existing infrastructure, technology and services to the needs and practices of the particular organization and/or of the industry it operates in;
- Limited availability, unreliability and cost of technical skills.

**B. Issues in E-Commerce- Business-With-Consumer**

**1) Payment Issues**

Electronic commerce is presaged on the assumption that the participants will pay for what they buy. But there has been a marked reluctance among net-users to actually part with their money, particularly for digital goods and services. As a result, much of the current business on the Internet is funded using business models other than user-pays, primarily advertising and sponsorship.

**2) Trust**

Consumers are seriously concerned about a number of dimensions of trust. These concerns are discussed, and can be analyzed into the following categories:

- Trust in the security of personal data while it is in transit during electronic transactions;
- Trust in the privacy of personal data arising from electronic transactions. This involves a great deal more than the mere question of security of data storage, and is briefly addressed in the following sub-section; and
- Trust in the subsequent behavior of the other party to an electronic transaction. In particular, there is a fear among consumers, based on prior experiences with marketers in other contexts that they are likely to make unwarranted assumptions about the nature of any relationship that may arise from the transaction.

**3) Identification Anonymity**

The Internet has stimulated enthusiasm, and at times euphoria, for freedom in cyberspace, typified by John

- *value authentication* (which involves means of ensuring that parties to a transaction have grounds for confidence in the security of value transferred);
- *attribute or eligibility authentication* (which provides means of testing whether a party has a particular characteristic relevant to participating in such a transaction, without recording the party's identity); and
- *pseudonymous transactions* (where one party remains anonymous to the other, means exists for the real identity to be discovered, but those means are subject to legal, organizational and technical protections).

#### **4) Consumer Protections**

Technology-based consumer transactions are, in many cases, not subject to the same kind of protections as are applicable to transactions using established points-of-sale, and door-to-door, mail and telephone selling. There are significant challenges confronting the establishment of an effective regulatory framework for Internet activities.

### **CHALLENGES, UNCERTAINTIES AND FUTURE PROSPECTS OF E-COMMERCE**

There are five key challenges that e-commerce firms are encountering in emerging Indian markets.

#### **1. Indian customers return much of the merchandise they purchase online.**

Ecommerce in India has many first time buyers. This means that they have not yet made up their mind about what to expect from ecommerce websites. As a result, buyers sometimes fall prey to hard sell. But by the time the product is delivered, they demonstrate remorse and return the goods..

#### **2. Cash on delivery is the preferred payment mode.**

Low credit card penetration and low trust in online transactions has led to cash on delivery being the preferred payment option in India. Unlike electronic payments, manual cash collection is laborious, risky, and expensive.

#### **3. Payment gateways have a high failure rate.**

As if the preference for cash on delivery was not bad enough, Indian payment gateways have

an unusually high failure rate by global standards. Ecommerce companies using Indian payment gateways are losing out on business, as several customers do not reattempt payment after a transaction fails.

**4. *Postal addresses are not standardized.***

If you place an online order in India, you will quite likely get a call from the logistics company to ask you about your exact location. Clearly your address is not enough. This is because there is little standardization in the way postal addresses are written. Last mile issues add to ecommerce logistics problems.

**5. *Logistics is a problem in thousands of Indian towns.***

The problem with logistics is compounded by the fact that cash on delivery is the preferred payment option in India. International logistics providers, private Indian companies, and the government-owned postal services are making a valiant effort to solve the logistics problem. If someone could convert the sheer size of the problem into an opportunity, we might soon hear of a great success story coming out of the Indian logistics industry.

**CONCLUSION**

, Indian e-commerce and online shopping together plays a significant instrument in making comprehensive growth and will definitely witness greater changes in the coming years. It is contributing to the economy in a significant manner and has gained its popularity due to the fast development in the area of information technology. Hence, researchers in this field will need to study more on the security and critical issues relate to e-commerce.. companies doing ecommerce must invent new business procedures and rules, the legal system is trying to adapt existing laws to fit new settings where it is simply unclear how these laws will apply. The bursting of the dotcom bubble has made several companies apprehend that doing business on the Internet is not as easy at it sounds The rapid pace of e-commerce development has generally left the legal system struggling to keep up and gasping for breath.

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**A STUDY ON MOST RECENT TRENDS IN MARKETING AND THEIR IMPACT ON  
BUSINESS PERFORMANCE**

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**ABSTRACT:**

In the fast-paced and ever-evolving world of marketing, staying abreast of recent trends is crucial for businesses to maintain a competitive edge. This article explores the latest marketing trends and their implications for businesses. Through a comprehensive study, we aim to provide insights into effective marketing strategies, the role of technology, and consumer behavior shifts. Our findings are based on a thorough literature review, data analysis, and interpretation.

**INTRODUCTION:**

Marketing has always been a dynamic field, continually adapting to technological advancements, market conditions, and changing consumer preferences. Recently, several trends have emerged that are reshaping the marketing landscape. This study aims to delve into these trends, offering a detailed analysis to help businesses harness new opportunities and stay competitive.

## REVIEW OF LITERATURE:

A review of current literature reveals several key trends in marketing:

1. **Digital Transformation:** The increasing importance of digital channels, including social media, search engines, and e-commerce platforms.
2. **Personalization:** Tailoring marketing efforts to individual consumer preferences using data analytics.
3. **Content Marketing:** Creating valuable content to attract and engage customers.
4. **Influencer Marketing:** Leveraging social media influencers to reach target audiences.
5. **Sustainability Marketing:** Emphasizing environmentally friendly practices and products.

## OBJECTIVES OF STUDY:

### PRIMARY OBJECTIVE:

To identify and analyze the most recent trends in marketing and their impact on business performance.

### SECONDARY OBJECTIVE:

- To understand the role of technology in shaping marketing strategies.
- To explore changes in consumer behavior and preferences.
- To provide actionable recommendations for businesses to improve their marketing efforts.

## RESEARCH METHODOLOGY:

### Research Design

A mixed-method approach was adopted for this study, combining qualitative and quantitative research methods.

### Sample Size

The study surveyed 200 marketing professionals and analyzed 50 case studies from various industries.

## Population Size

The target population includes marketing professionals, business owners, and industry experts across different sectors.

## STATISTICAL TOOLS USED:

- Descriptive Statistics
- Regression Analysis
- ANOVA (Analysis of Variance)

## DATA ANALYSIS AND INTERPRETATION:

**TABLE 1 : IDENTIFY SIGNIFICANT TRENDS AND THEIR IMPACT ON MARKETING STRATEGIES. BELOW IS A TABLE SUMMARIZING KEY FINDINGS:**

Trend	Impact on Business	Statistical Significance (p-value)
Digital Transformation	Increased online sales	0.001
Personalization	Higher customer satisfaction	0.005
Content Marketing	Improved brand awareness	0.002
Influencer Marketing	Enhanced customer engagement	0.003
Sustainability Marketing	Positive brand perception	0.004

## FINDINGS:

- **Digital Transformation:** Businesses that have embraced digital channels have seen a significant increase in online sales.

- **Personalization:** Tailored marketing efforts lead to higher customer satisfaction and loyalty.
- **Content Marketing:** Quality content is crucial for building brand awareness and trust.
- **Influencer Marketing:** Collaborating with influencers can significantly boost customer engagement.
- **Sustainability Marketing:** Promoting sustainable practices enhances brand perception and can attract environmentally conscious consumers.

#### **SUGGESTIONS:**

- **Adopt Digital Tools:** Invest in digital marketing tools and platforms to enhance online presence and sales.
- **Leverage Data Analytics:** Utilize data analytics to personalize marketing efforts and improve customer experiences.
- **Focus on Quality Content:** Develop and share valuable content to engage and inform your audience.
- **Collaborate with Influencers:** Partner with relevant influencers to reach and engage your target audience.
- **Promote Sustainability:** Highlight your commitment to sustainability to attract and retain eco-conscious customers.

#### **CONCLUSION:**

The marketing landscape is continually evolving, with digital transformation, personalization, content marketing, influencer marketing, and sustainability emerging as key trends. By understanding and leveraging these trends, businesses can enhance their marketing strategies, improve customer engagement, and achieve better performance outcomes. Staying ahead of these trends and adapting to changes will be crucial for businesses aiming to maintain a competitive edge in the market.

## **Current trends and challenges in human resource management**

Dr. Suresh Suvarna

### **Abstract:**

This chapter explores the various challenges and emerging patterns that Human Resources has encountered in recent years. HR managers now have a broader scope of responsibilities, which include tasks such as recruitment, selection, employee retention, and personnel training. In addition to overseeing employee motivation, welfare, rewards, remuneration, infringements, and incentives, an HR manager is responsible for managing these aspects. The phenomenon of globalization has led to the emergence of new objectives in the field of human resources, resulting in a significant change in the prevailing paradigm.

The developments in the HR department are remarkable and have significantly transformed the outlook of HRM. The function of an HR executive has evolved significantly, expanding from the personnel department to HRM. The scope of HRM has also broadened from a limited role to a multidimensional one, resulting in a drastic change in methodology. Technology has also enhanced the HR department. The HR department has implemented technology-driven improvements such as outsourcing, remote work, offshore recruitment, flexible scheduling, and work-from-home opportunities. The process of globalization has broadened the scope of human resource management (HRM), while advancements in technology have significantly transformed its function and approach. The forces of globalization and technology have compelled HR departments to adjust and grow the field of human resource management (HRM).

**Key Words:** Current Trends, HR, HRM

## Overview

Human resource management aligns organizations and individuals by establishing objectives. The role of HR has evolved from being a mere recruiter to becoming a strategic planner and catalyst for organizational development. According to Wendell French, HRM is the methodical management of a complex system of interconnected procedures that impact and engage all individuals inside an organization. The HRM department is responsible for recruiting, selecting, training, developing, motivating, and retaining personnel, as well as safeguarding human rights. Human Resource Management (HRM) has become a crucial and indispensable component of the firm. Executives bring together people and companies in order to enhance productivity. HR leaders in the 21st century face increased opportunities and significant pressure due to advancements in companies. The process of globalization has significantly amplified the need for highly skilled and capable individuals. CEOs should anticipate well-coordinated activities and strategic mapping abilities from the HR department as it strives to enhance the resilience, adaptability, and agility of enterprises. Daljeet Kaur Lal's essay on the top HR trends of 2021 highlights the significant impact of artificial intelligence, diversity, the gig economy, cloud-based HR technology, and productivity skills on HR management. These trends will drive the formulation and implementation of corporate policies as well as efforts to enhance employee engagement, ultimately leading to business growth.

## Findings and Analysis

According to this research, human resource management (HRM) has seen changes over time and has had to adjust to new advancements. The data has included a discussion about HRM's credentials and upcoming trends. Below are the most current trends and concerns in human resource management (HRM).

The current trends in human resource management (HRM) emphasize and encourage diversity.

Contemporary firms encompass diverse ethnic backgrounds, sexual orientations, and age groups. Consequently, the HR department is responsible for fostering employee confidence and establishing a fair and inclusive work environment. This enhances the expansion of the organization. Studies indicate that firms that promote inclusivity have a significant increase in employee performance, with a growth rate of 50%.

Remote work has emerged as a significant phenomenon. Following the epidemic, corporations implemented remote work to allow for flexible scheduling. According to HR manager Stephanie Lane, it provides employees with the ability to create flexible schedules and broadens the range of skilled individuals that a company can hire. "This strategic decision has proven to be the most effective for the Human Resources department." The implementation of remote working resulted in a reduction in employee absenteeism.

Accessible on the internet as required. This decision also motivated several women who were previously limited in their opportunities to enter the workforce. Remote HR executives oversee and assess employee performance and engagement. Following the epidemic, the majority of organizations offered the option for employees to work remotely on a full-time basis.

Promote the development of analytical thinking and proficiency in using digital tools and technologies.

Current trends in human resource management (HRM) involve enhancing recruitment strategies and incorporating critical thinking and digital skills as prerequisites for potential applicants. Proficiency in data analytics is crucial for contemporary business professionals who are well-versed in technology. HR executives need personnel with strong critical thinking skills to assist in dispute resolution and strategic decision-making.

Amidst the rapid pace of modern society, HR directors must devise strategies to guarantee the enhancement of employee skills through the provision of career options and the reorganization of job responsibilities. Developing the skills of employees is crucial in the field of human resource management.

Artificial intelligence (AI) has gained significant popularity in recent times. Cloud computing aids HR professionals in recruiting. This technology enables HR leaders to effectively oversee many activities. Artificial intelligence handles many tasks, such as payroll management, training coordination, performance evaluation, resume authentication, addressing human resources inquiries, and facilitating data transmission. Deepti Chopra, a co-founder of Defaces, asserts that AI will greatly diminish the time it takes to employ and enhance the overall experience for job

The human resources department should contemplate implementing flexible working arrangements in order to maintain their workforce. It is challenging to maintain employee concentration in the current freelance landscape. The HR executive is required to suggest a flexible work schedule in order to accommodate the needs of employees.

The HR department is responsible for making several daily choices, such as recruitment, designing benefit packages, managing employee benefits, and other related matters. HR initiatives should effectively utilize analytics and information. Monitor and quantify readily available data.

The HR department has expertise in the areas of training and development. An effectively organized training session facilitates the acquisition of knowledge and skills, fosters personal development, and enhances job performance among employees. Current trends in HRM training encompass virtual learning, collaborative learning, conference sessions, and hands-on experience for employees.

Human resource managers should prioritize the enhancement of skills. Staff members are eligible to receive a yearly allowance, compensated time away from work, and authorized absences. Clodgah Beaty, co-creator of the Emotional Salary Barometer, states that although professional growth and development will remain significant, there is expected to be a rise in personal improvement activities. The focus of leadership development will be on enhancing personal growth and cultivating a sense of professional purpose and significance.

Enhanced employee experience

HR professionals must effectively manage the hybrid work paradigm, which allows employees to make a choice between virtual and traditional workspaces. HR executives should enhance online virtual processes, communication, technical solutions, and new compensation packages.

In recent years, there has been a reorganization of the social safety net. The HR executive is responsible for developing an innovative policy that promotes the well-being of employees and the community. Support encompasses several forms of assistance, such as monetary aid, enhanced sick leave, adaptable work schedules, a relief fund for the community, and complimentary community services.



HR professionals utilize social media, blogs, and other platforms as alternatives to traditional marketing for recruiting applicants. The collaboration between HR and marketing is essential. Human Resource Management (HRM) currently focuses on several aspects such as employee well-being, workplace safety, handling grievances, technological advancements, and implementing creative recruitment strategies.

In recent years, HRM has encountered increased complexity and unique challenges. Irrespective of its magnitude or geographical position, every company has substantial challenges. HR challenges arise as a result of economic, political, climatic, and social causes. An astute HR manager should judiciously utilize organizational resources to ensure that staff are equipped with the necessary resources to achieve optimal productivity.

HRM currently encompasses employee well-being, workplace safety, grievances, technological advancements, innovative recruitment tactics, and employee productivity. The following are a few obstacles:

Acquiring and retaining new employees was a significant difficulty for the HR department. As per the job description, HR executives are required to evaluate the suitability of employees. HR leaders can attract new talent by incentivizing employee referrals to stimulate the introduction of new individuals. The HR executive might employ collaborative efforts and open and honest guidance to entice fresh talent.

Due to the potential financial burden caused by excessive turnover, it is imperative for the HR department to retain skilled employees. An optimal work environment, expanded opportunities, and employee motivation, recognition, and engagement can assist the HR department in surmounting this challenge.

The HR department faces challenges in adapting to both external and internal changes. The challenges can encompass political, technological, and societal aspects. Human resource managers should embrace change and make the necessary preparations for their team. HRM may effectively adapt to change by engaging in clear and open communication with employees, gaining a comprehensive awareness of their needs, and strategically planning for future requirements.

The HR department often faces challenges in enhancing the skills of employees. HR executives are responsible for analyzing, monitoring, and correcting employee performance. The HR executive can facilitate skill enhancement and growth by establishing learning objectives and implementing online and micro-learning methods.

HR executives are responsible for overseeing and handling a diverse range of backgrounds, perspectives, and experiences. To address this challenge, it is beneficial to establish an inclusive team, engage in cultural awareness activities, foster team building, and celebrate cultural diversity.

The human resources department is confronted with the issue of employee turnover. Minimizing employee attrition rates, which can result in increased expenses and resource allocation, poses a challenge for human resources managers. HR leaders can resolve this issue by implementing staff training and development programs, providing flexible work schedules, conducting departure interviews, and implementing more strategies.

Globalization refers to the process of increasing interconnectedness and interdependence among countries, economies, and cultures worldwide.

The HR department has recently encountered a heterogeneous workforce as a result of globalization. It might be challenging to influence an employee remotely. Software can facilitate the cultivation of an online work culture. Therefore, HR managers should utilize this matter as an opportunity to enhance management by embracing and accommodating many cultures and languages.

HR personnel find it challenging to keep up with company legislation and regulations. Therefore, failing to adhere to policies can impede the expansion of a company and squander valuable resources.

Technology is currently a pressing concern for HR managers. HR managers need to adjust to emerging working patterns, cloud computing, applications, and digital platforms. HR managers can overcome this challenge by enhancing the organization and cultivating a proficient technical workforce capable of adapting to emerging technology.

The HR department of today needs to adjust to the work style, approach, and attitude of millennials. Human resource managers must align with the expectations of the current generation and provide guidelines that are relevant to the present circumstances.

#### Result and conclusion

Based on the previous statement, HRM addresses several challenges, such as worker diversity, globalization, adapting to new trends, and training and development. These difficulties can be overcome by employee motivation, technological advancements, and the adoption of emerging trends such as AI and automation. Modern human resource management (HRM) needs to effectively meet the expectations of both management, employees, and job seekers in order to obtain a competitive advantage. HR executives should systematically implement overarching management principles and align them with the objectives of the firm. Organizational success now hinges on innovation, making it imperative for HR leaders to lend their support. HRM transitioned from the process of recruiting employees to focusing on the strategic acquisition and retention of talented individuals. HRM currently includes change management, diverse workforces, globalization, technological advancements, planning, and other related areas. In order to confront rivals, risk, and unpredictability, it is imperative for HR to operate with efficiency and effectiveness. The HRM department must proactively prepare for and strategically tackle challenges and hazards. The HRM department has undergone recent changes.

## **A Study on Promoting Person-Centre Planning for Children with Special Educational Needs in Inclusive Classroom Settings**

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### **Abstract**

The current study discusses promoting person-centered planning (PCP) for children with special educational needs (SwSENs) in inclusive classroom settings. PCP has recently been used to analyse social services for children with SENs. PCP covers many methods that prioritize the SENs when planning service distribution and delivery for children with SENs in inclusive classroom settings. PCP is a strategy that helps families plan for the future of their children with special needs. When collaborating, students can share their interests and develop plans to pursue their goals. Service delivery that respects user autonomy, diversity of experience, transparency of data, and user control can come from conventional or unconventional sources, such as a government agency. Social care institutions changing the paradigm toward PCP provide excellent service for children with SENs. Our goal with PCP is to get more young people involved in making decisions about social programs and policies. Strategy to Social Inclusion and Social Justice PCP was created for children with SENs. Where PCP's tools and techniques came from. Children with SENs can benefit socially, emotionally, and academically from demanding and gratifying participation. Responsible action would be to offer PCP to children SENs. The PCP framework and the child's perspective value protecting children's rights with SENs. PCP aims to help children with SENs learn how to strike a healthy balance between competing interests and ideals. It requires paying close attention to another person, identifying their present and potential goals, and reacting suitably. The law must ensure that children with SENs have a real opportunity to weigh in on matters of education policy that directly affect them. To stay under the rules, PCP is being explored. There are situations where PCP can be beneficial. Numerous features must be present in a PCP for children with SENs in inclusive classroom settings. Still, two of the most important

are having a leadership team that encourages teamwork and gives personnel a voice in our destiny. It would suggest that PCP is a valuable method for assisting families with children with SENs to get involved in their children's educational experiences. You may learn a lot about their options and potential by listening to someone. Using a PCP framework, teachers can work together to address the needs of learners with SENs and promote equitable, inclusive classroom settings.

**Keywords:** Promoting, Person-Centre Planning, Children with Special Educational Needs, and Inclusive Classroom Settings

## Introduction

In this study, the author claims that PCP has developed into an evidence-based profession while carefully considering the implications for both policy and practice. It will look at a range of topics. It will take into account the costs involved, organizational concerns that may facilitate or obstruct PCP efficacy, as well as potential impacts of PCP deployment on the day-to-day life of individuals with SEN. Its practical relevance will then be discussed by reviewing the many roles experts can play in assisting PCPs. Around 20 years ago, PCP was developed to help persons with developmental disabilities better understand their experiences and to work with them and their support to improve those experiences (O'Brien et al., 1997). Ensuring anyone who wants to use PCP for life planning can is an essential starting point. Numerous activities have been started to boost PCP uptake to help this challenging goal. One such accomplishment was carried out as part of the investigation into specific educational needs (Robertson et al., 2005).

Over the past few decades, how services are provided to children with SEN has changed. Instead of imposing one size fits all frameworks, services are now tailored to the individual rather than system-centered (Kaehne & Beyer, 2014). Given its widespread acceptance, individualized support is commonly used in programs for SEN students. The most recent strategy, PCP, aims to raise the standard of living for children with SEN by offering them individualized care. It is frequently associated with inclusion plans, which highlight the idea of empowerment and aim to give children with SEN access to the same opportunities as the general population (Bollard, 2009). The PCP technique for developing an individual program is well-known and regularly used for children with SEN in the classroom. The initiative seeks cooperative services focused on competency, healthy relationships, and community presence. PCP is an extensive multi-component intervention that can impact a wide range of outcomes related to a person's quality of

life. It is a general phrase frequently used to describe strategies and approaches that share some traits rather than a uniform solution. Although the practical application of these strategies may vary depending on the situation and goal for which they are used, their fundamental goal remains the same. A way of life based on preferences, choices, shared authority, rights, and inclusion is what all PCP versions are supposed to assist students with SEN in developing, as per the widespread understanding (Klatt et al., 2002). PCP has the potential to increase the success of all recovery-focused and evidence-based treatments, in addition to bringing practice in line with the new national guidelines for health care reform for students with SEN in inclusive classroom settings.

### **Demonstrating Person-Centred Planning**

One could argue that the phenomenological method of personality psychology served as the foundation for PCP. The main difference of this strategy is that it seeks to understand a person by understanding their perspective of reality (Zimbardo, 1992). When dealing with experts, whether at a meeting or while paying a person a visit at home, introduce the concept of PCP to the person or their representative. During this session, students with SEN will learn how to use PCP and be encouraged to opt for a facilitator or lead their programs. You need to have a specific level of PCP knowledge, including a basic knowledge of what it is, styles, applications, and resources, to introduce PCP to a person or family. A local area framework that includes categories, programs, and connections is necessary for planning. Children with SEN can be involved in decisions made about them under the existing educational norms. PCP has been offered as a suitable option for meeting duties under the law. The potential for using it in instruction has yet to receive significant research. In terms of SEN education and outcomes, it offers a thorough examination of PCP knowledge. Despite the paucity of education, PCP appears to be a successful strategy for involving kids, teens, and their families. It is required to conduct more research on PCP's usefulness in inclusive classroom settings. PCP was created within the health and social care profession to assist students with SEN to connect with prominent people to improve their quality of life (Claes et al., 2010; Miller et al., 2017). PCP combines positive psychology and solution-focused approaches with the values of a humanistic strategy (Rogers, 1951) to promote created together and realistic solutions rather than service-led ones and uncover individual strengths rather than challenges (Bouvier, 2018). PCP approaches are just systematic methods to ensure that education meets the needs of each child or young person because they understand that every child and young person

has a different way of learning, communicating, connecting, and making decisions. Placing students with SEN at the centre of all school planning may be challenging for teachers, but doing so pays dividends since happy students with SEN contribute to happier and more productive schools. Additional details on PCP in education can be found in the main section on personalizing education. Places people first in planning and decision-making, which is one of the essential elements of PCP:

- The person is the centre of focus.
- Together, friends and family organize activities.
- Creating a shared future vision.
- Recognizing one's need for assistance and resources. Building ties with people and the community.
- Planning and evaluating action plans.
- Identifying who is in charge of follow-up.

### **Creating Person-Centred Teams**

The foundation of PCP is an understanding of what is essential to people, what kind of assistance they require, and their long-term objectives. Managers use these concepts to guide and control the members of their person-centered teams (Sanderson, 2002). A PCP encounter has the power to inspire and transform. It can also be painfully depressing when nothing changes. A PCP idea inspired planning. If we make fruitless attempts, we risk upsetting individuals and deliberately placing doubt in their minds. Additional research and activity are required after the strategy is put into practice. We initially believed that developing a specific strategy that accurately reflected the students with SEN would be the most challenging aspect of employing PCP. We assumed that it would be straightforward to carry it through once you had a plan. Leadership as a group capability for producing something of value is one of the tenets of the person-centered team approach (Senge, 1990). These tools can enhance communication between staff members and service recipients. A person-centered team addresses the needs of each member while pursuing a common goal. Tasks and duties are assigned to team members according to their interests and skills in a person-centered team. The group regularly discusses and offers comments on what it has learned. An updated person-centered team plan contains all this information, including goals, priorities, actions, and

reflection. Teams may explore becoming person-centered by working through seven questions, each with various useful tools for a PCP (Sanderson et al., 2007). Managers can assist the team in recording and applying what they learn by using particular tools like learning notes and four-plus-one questions. A recent study demonstrating that plans are notably more likely to succeed if there is leadership and the team employs person-centered strategies (Sanderson, 2000) is another argument supporting the development of person-centered teams. It is supported by learning about the execution of person-centered plans. It focuses on the unique time-management techniques employed by persons who develop and carry out person-centered plans, which usually entail spending more time interacting socially with friends and family or participating in community events. Employers can identify their primary responsibilities, feel strongly engaged in their work, and know where to deploy their creativity and judgment using PCP strategies (Smull & Sanderson, 2005). As an outcome of these experiential changes, person-centered teams must naturally adjust how they manage their time to support people in trying new things. Person-centered teams must be flexible to help individuals make these changes in their life and adapt to new developments. A team that invests time and money into creating a person-centered team may produce more significant outcomes for students with SEN in inclusive classroom settings.

### **Incorporating Person-Centred Planning in Education**

Each of us plans and approaches life uniquely. Some people are clear about their goals and how to achieve them, while others grasp opportunities as they arise. Some people daydream before thinking about how to make their fantasies come true. Incorporating PCP into education should be central to everything we do with children with SEN in inclusive classroom settings. The use of PCP assists expelled students with SEN to return to school and incorporate with society at large. Young people of all ages participated in the PCP process, and the viewpoints of everyone involved aided in clarifying PCP adoption and its long-term effects. Involving children and teenagers in planning and decision-making is a goal of PCP. Children's attitudes, behaviours, and learning processes can alter as they take an active role in the learning process.

Additionally, they have the potential to grow into engaged partners who work with grownups to effect change. The PCP is an effective strategy for creating win-win solutions. The PCP is a methodical, all-inclusive technique that works well in social interactions, especially dispute resolution. Through encouraging the development of people's potential as individuals,



communities, and organizations, PCP empowers and supports learning, well-being, and resilience. PCP encourages growth, the acquisition of self-control abilities, and the acceptance of responsibility for one's actions as opposed to dependence (Zucconi, A. 2016). PCP is an ethical method of helping those in need. The PCP and voice of the child social justice movements are more modest. This movement includes the civil rights, women's, and disability rights movements. Following experience initiating, contributing to, and maintaining PCP, a professional can incorporate PCP into professional practice at the individual, local, and system levels. They might achieve their goals and grow more independent as an outcome.

Presently, incorporating PCP into education is a tried-and-true strategy. As per recent studies, PCP in school significantly impacted levels of choice, social development, and community participation, relationships with family and friends, and learning. These are the guiding principles for PCP incorporation:

- The opinions and feelings of children and young people must be considered.
- Each child and adolescent is entitled to voice their opinions regarding the services they receive.
- It is the right of every child and teenager to participate pretty and actively in school life.
- Young people can significantly enhance things and are exemplary contributors.
- Providing young persons with the necessary resources, promoting their independence, and empowering them whenever feasible is essential.

### **Person-Centred Planning for Students with Special Educational Needs**

In contrast to traditional systems like Individual Personal Planning and Individual Facilitation, where people are passive recipients of care and experts make decisions and plans for them, PCP allocates authority from staff and stakeholders to individuals and their families. The autonomy, self-determination, and choice of the individuals involved, particularly those who care about the individuals concerned, are highly valued in PCP. The students with SEN's active role in the planning process, motivated by their strengths and capacities rather than their weaknesses and impairments, is an essential element of PCP (Sanderson, 2000). Services for children with SEN have changed over the past few decades, moving from a system-centered strategy to a PCP that

personalizes care around the individual rather than enforcing a single solution for all systems (Kaehne & Beyer, 2014). As per the quality of care they provide, parents can significantly affect the lives of students with SEN and are essential to the success of PCP. Students with SEN stated that the staff's practical and emotional support was the most important aspect in assisting them in reaching their goals (Heller et al., 2000). PCP is a well-known and often-used approach for creating personalized programs in the context of students with SEN (Felce, 2004; Green et al., 2000). As per Cloutier, Malloy, Hagner, and Cotton (2006), PCP refers to various methods and suggestions to fundamentally better students' lives with SEN. Students with SEN are against having a plan as the primary driver of change, as per Dumas, De La Garza, Seay, and Becker (2002). Instead, they blame change, successes, and failures on the PCP facilitators, whose commitment to the program has been identified as the most potent predictor of good outcomes for people (Sanderson et al., 2006). Even though students with SEN are increasingly employing PCP techniques (Amado & McBride, 2002; Keyes & Owens-Johnson, 2003; King et al., 2005), we are not aware of any thorough report on the educational pursuits on the value of PCP. Individualized support has received high praise and entered the SEN services lexicon. The inclusion strategy seeks to provide students with SEN with the same opportunities as the general population and highlights the importance of equality and independence. The most current approach, PCP, aims to achieve individualized support for students with SEN and improve their quality of life (Bollard, 2009). The facts for PCP's effectiveness are thin, and it does not demonstrate that it can significantly impact students with SEN. More information is required about PCP and its components. There have been small-scale successful demonstrations of its efficacy, but more extensive programs are needed to examine its therapeutic, financial, and broader applications. The PCP creates a bridge between students with SEN, their families, and the institutions that support them in inclusive classroom settings.

### **Person-Centered Planning in Inclusive Education**

The most effective strategies are encompassing, focused on outcomes, and encouraging. This is precisely what individual planning aims to do. In order to complete its mission, the team has returned with a set of holistic planning tools. The premise of a PCP is that it is possible to help a student with SEN get what they want to achieve in life. Many of us here are old enough to remember a time before inclusive education. Long gone is integrated education used to describe the state of education; instead, inclusion has taken its place. In recent decades, there has also been

a decline in the value placed on including others. Since we recognized that students with SEN would want more support to feel fully involved, we designed PCP with them in mind. Although the widespread application of PCP in social care and education, children with SEN are rarely provided with the tailored support they need to thrive in the real world. We have been pushing to create a third-party mediator (Pearpoint, J, 2015). Supporting children with SEN led to the development of PCP, an approach to social justice and inclusion. More than three decades ago, PCP was widely used. Parents of students with SEN have been highlighted as a prime instance of a successful behaviour support strategy of how they use their children's similarities to other students to advocate for their involvement in inclusive classroom settings.

After decades of segregation, inclusive education for SEN students has finally become a reality. Children with SEN are legally required to be included in decision-making processes that directly affect them. Using PCP to meet the demands of regulators has been proposed. Fewer analyses, however, have examined its utility in fully inclusive classroom settings. It focuses on the outcomes of an extensive literature analysis concerning the use of PCP in inclusive education for children with SEN. Despite PCP's potential for including children, adolescents, and their families in the educational process, further in-depth studies in inclusive education are needed. Additional work examining the effectiveness of PCP is needed, specifically with continuous and child-led designs, a more diverse range of venues and participants, and standardized and observable measures. The current education regulations mandate that students have a genuine say in the issues that directly affect them. The usage of PCP has been advised as an appropriate approach for realizing the goals of inclusive education programs. However, works exploring this subject matter's possible pedagogical uses still need to be included. Students with SEN may have fewer chances to have their voices addressed in inclusive classroom settings.

## **Conclusion**

This is the first attempt to investigate how PCP exerts its therapeutic effects. In contrast to the findings of research on supported living, we found no correlation between participant capacity and PCP outcomes outside of the realm of enhanced contact with peers. Those with emotional or behavioral issues, autism spectrum disorder, or numerous health problems were less likely to receive a plan. It has been discovered that patients with mental health, emotional, or behavioral disorders usually benefit less from treatment. The outcome highlights significant disparities in

access to PCP and the benefits of having one, particularly in mental health and autism. Multiple contextual factors appear to be relevant to whether or not someone gets a PCP and how much they would benefit from having one. There is now more proof than ever that committed facilitators are essential to the overall success of PCP. To ensure that as many students as possible with SEN can reap the advantages of PCP in inclusive classrooms, these disparities must be addressed in policy and practice. PCP is an illustration of an evidence-based method. We have also considered how it might affect managers and other professionals who help people with SEN live their chosen lives. The main takeaway is that, despite the mounting evidence that PCP benefits students with SEN in inclusive classrooms, managers and teachers must learn to manage these challenges. In this review, we have endeavoured to provide a broad overview of the status of research on PCP for people with ID, to identify outcomes most likely influenced by PCP, and to evaluate its effectiveness. Sixteen studies were included in this review, which suggests that PCP may have a moderate positive impact on various outcomes and can potentially ameliorate and enrich aspects of the quality of life for students with SEN. PCP was shown to have a significant positive impact on students with SEN in inclusive classroom settings.

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## Significance of Modern Technological & Digital Advancements

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### ABSTRACT

*This chapter explores the profound impact of technological advancements on modern society, encompassing healthcare transformation, educational enhancements, communication revolution, transportation and mobility innovations, and their economic implications. It discusses how innovations like telemedicine, wearable health devices, and AI-driven diagnostics are improving healthcare accessibility and efficiency. Additionally, it examines the integration of technology in education through e-learning platforms, VR/AR tools, and AI-driven educational aids, enhancing learning flexibility and engagement. The chapter also explores how advancements in communication (Digital) technology, IoT, and digital tools are reshaping global connectivity, business operations, and collaboration. Furthermore, it investigates the transformative potential of electric and autonomous vehicles in transportation, alongside the economic shifts driven by e-commerce, fintech innovations, and the gig economy. Overall, this chapter underscores the pivotal role of technology in shaping contemporary life and emphasizes the need to embrace these advancements responsibly for sustainable development and societal benefit. Case studies have been discussed. Picture speaks louder than voice. This chapter incorporates images to explain the concepts well.*

**Keywords:** Health care transformation, Wearable device, E-learning platforms, Electric vehicles, IIoT, AI.

### INTRODUCTION



The chapter delves into the intricate relationship between technological advancements and their implications on modern society. It explores the multifaceted impact of technology, examining both its benefits and potential drawbacks. As we navigate through this digital era, technology's influence on various sectors, including healthcare, education, and communication, has become increasingly evident. The chapter begins by providing insight to the sophisticated innovations of today.

The inclusion of relevant images throughout the chapter enhances comprehension by visually representing concepts. These images serve as powerful tools, making the content more accessible to readers. Additionally, the chapter incorporates two case studies that provide practical examples of technology in action. These case studies highlight real-world applications, illustrating how technological solutions are being implemented to address contemporary challenges.

The first case study focuses on the healthcare sector, showcasing the transformative power of medical technology. It details how advancements such as telemedicine, robotic surgery, and wearable health devices are revolutionizing patient care. Through this case study, readers gain insight into the tangible benefits of technology in improving health outcomes and accessibility to medical services.

The second case study examines the role of technology in education. It explores how digital tools and platforms are reshaping the learning landscape, making education more interactive, personalized, and inclusive. This case study demonstrates the potential of technology to enhance educational experiences and bridge gaps in access to quality education.

These case studies illustrate how technological advancements such as telemedicine and virtual reality are reshaping healthcare delivery and educational practices in Tamil Nadu, India, by enhancing accessibility, efficiency, and learning outcomes.

In summary, this chapter provides a comprehensive overview of the pervasive influence of technology in modern society.

### **1. Healthcare Transformation**

Modern technology has revolutionized healthcare, improved patient outcomes and increasing efficiency. Innovations such as telemedicine, wearable health devices, and AI-driven diagnostics have made healthcare more accessible and effective (Smith, 2020) [1]. Telemedicine allows patients to consult with doctors remotely (Fig:1), breaking down geographical barriers and



reducing the strain on healthcare facilities (Jones & Brown, 2019) [2]. This real-time consultation capability means patients can receive timely medical advice without waiting for in-person appointments, leading to quicker diagnoses and interventions in critical situations.



*Fig:1 Telemedicine Consultation*

### **Wearable Health Devices**

Wearable health devices, such as fitness trackers and smartwatches, enable individuals to monitor their health in real-time, providing valuable data that can be shared with healthcare professionals (Williams, 2021) [3]. This continuous monitoring allows for proactive management of chronic conditions and early detection of health issues, potentially reducing hospitalizations and improving overall health outcomes. Furthermore, AI and machine learning analyze complex medical data to offer more accurate diagnoses and personalized treatment plans (Garcia, 2022) [4]. These technologies can process vast amounts of patient data quickly, identifying patterns and predicting outcomes that may have been overlooked using traditional methods.



*Fig:2 Wearable Health Devices*

## **2. Educational Enhancements**

The integration of technology in education has transformed teaching and learning processes. E-learning platforms and digital classrooms have made education more flexible and accessible, allowing students from diverse backgrounds to receive quality education regardless of their location (Davis & Lee, 2021) [5]. Real-time collaboration tools in digital classrooms enable instant feedback and interaction between students and teachers, enhancing learning engagement and understanding of complex subjects.

Tools like virtual reality (VR)(Fig:3) and augmented reality (AR) create immersive learning experiences, making abstract concepts tangible and stimulating curiosity (Clark, 2020) [6]. Students can explore historical sites, dissect virtual organisms, or simulate scientific experiments in real time, fostering a deeper understanding through hands-on practice. Additionally, AI-driven educational tools provide personalized learning experiences tailored to each student's learning pace and preferences (Thompson, 2022) [7]. This adaptive learning approach ensures that students receive targeted support and challenges, optimizing their educational journey and preparing them effectively for future careers.



***Fig:3 Virtual Reality in Education***

### **3. Communication Revolution**

Technology has significantly altered the way we communicate, making it faster, easier, and more convenient. The advent of smartphones, social media, and instant messaging apps has connected people globally, fostering real-time communication regardless of distance (Adams, 2019) [9]. Real-time communication facilitates immediate sharing of information and ideas, accelerating decision-making processes and enabling rapid responses to changing circumstances in both personal and professional contexts.

Moreover, advancements in communication technology have empowered businesses with real-time collaboration tools like video conferencing and project management software (Taylor, 2021) [11]. Teams can collaborate seamlessly across different time zones, enhancing productivity and efficiency in project delivery. This capability has also facilitated remote work opportunities, enabling professionals to work from anywhere while staying connected to their teams and clients.

#### 4. Transportation and Mobility

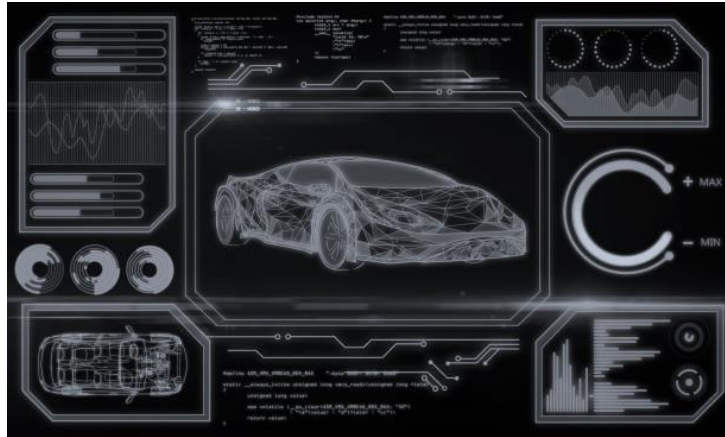
Technological advancements have transformed transportation and mobility, offering safer, more efficient, and environmentally friendly alternatives to traditional methods (Johnson, 2020) [12]. Electric vehicles (EVs)(Fig:4) reduce carbon emissions and dependence on fossil fuels, contributing to a more sustainable future (Smith, 2021) [13]. Real-time data integration in EVs enables drivers to optimize routes based on traffic conditions and charging station availability, enhancing efficiency and reducing travel time.

Autonomous vehicles equipped with advanced sensors and AI algorithms can navigate complex traffic scenarios in real time, reducing accidents caused by human error and improving overall road safety (Brown, 2022) [14]. Furthermore, ride-sharing apps and mobility-as-a-service (MaaS) platforms provide real-time information on vehicle availability and pricing, offering cost-effective transportation options and reducing congestion in urban areas (Davis, 2020) [15].



***Fig:4 Electric Vehicles***

Autonomous vehicles(Fig:5), equipped with advanced sensors and AI, have the potential to reduce accidents caused by human error and improve traffic flow (Brown, 2022) [14]. Additionally, ride-sharing apps and mobility-as-a-service (MaaS) platforms have made transportation more accessible and cost-effective, reducing the need for personal vehicle ownership (Davis, 2020) [15].



*Fig:5 Autonomous Vehicles*

## 5. Economic Impact

The economic impact of technological advancements has been profound, driving productivity and creating new opportunities across various industries (Garcia, 2021) [16]. The digital economy has revolutionized business models, leading to the emergence of e-commerce platforms that provide real-time inventory management and personalized shopping experiences (Adams, 2022) [17]. Real-time analytics and AI-driven insights enable businesses to make data-driven decisions swiftly, improving operational efficiency and customer satisfaction.

Furthermore, gig economy platforms like Uber and Airbnb leverage real-time matching algorithms to connect service providers with consumers, creating flexible work opportunities and disrupting traditional labor markets (Clark, 2021) [18]. Fintech innovations such as digital payment systems and blockchain technology facilitate real-time financial transactions and secure data exchanges, enhancing financial inclusion and transparency (Miller, 2022) [19].

## 6. IoT (Internet of Things)

The Internet of Things (IoT) represents a network of interconnected devices equipped with sensors, software, and other technologies that enable them to collect and exchange data. In various sectors, IoT has facilitated significant advancements:

**6.1. Healthcare:** IoT devices such as remote patient monitoring systems have revolutionized healthcare by enabling continuous monitoring of patients' health metrics outside clinical settings. These devices transmit real-time data on vital signs, activity levels, and medication adherence to healthcare providers, facilitating early detection of health issues and timely interventions.

**6.2. Smart Homes:** IoT devices in Smart homes(Fig:6), such as smart thermostats and security systems, enhance convenience and security by allowing remote monitoring and control via mobile apps. They optimize energy consumption and improve safety through automated alerts and responses.

**6.3. Industrial IoT (IIoT):** In manufacturing (Fig:7) and industrial settings, IoT enables predictive maintenance of equipment by monitoring performance metrics in real-time. This proactive approach minimizes downtime and reduces operational costs by addressing potential issues before they escalate.

**6.4. Environmental Monitoring:** IoT sensors deployed in environmental monitoring systems collect data on air and water quality, weather conditions, and pollution levels. This data aids in assessing environmental health, predicting natural disasters, and informing policy decisions.



**Fig: 6**



**Fig: 7**

## **7. AI (Artificial Intelligence)**

Artificial Intelligence (AI), powered by machine learning algorithms, transforms data into actionable insights and automates decision-making processes across various domains:

**7.1. Healthcare:** AI analyzes vast datasets of medical records, diagnostic images, and genomic data to assist in diagnosing diseases, predicting patient outcomes, and personalizing treatment plans. AI-driven algorithms improve clinical decision-making by identifying patterns and correlations that may not be apparent through traditional methods.

**7.2. Education:** AI applications in education include personalized learning platforms that adapt to students' individual learning styles and pace. AI tutors and virtual assistants provide students with real-time feedback and support, enhancing engagement and improving learning outcomes.

**7.3. Customer Service:** AI-driven chatbots deployed in customer service streamline interactions by handling routine inquiries, providing instant responses, and escalating complex issues to human agents when necessary. These chatbots enhance customer satisfaction through personalized recommendations and efficient problem resolution.

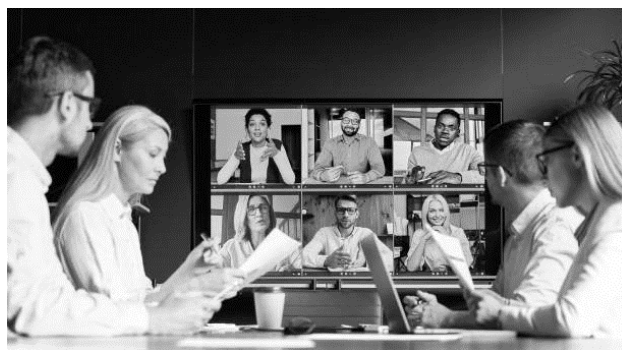
**7.4. Finance:** AI algorithms analyze financial data to detect fraudulent transactions, assess creditworthiness, and optimize investment strategies. These applications improve accuracy and efficiency in financial decision-making processes while mitigating risks.

## 8. Digital Tools

Digital tools encompass a wide range of software applications and platforms that enhance productivity, collaboration, and connectivity across industries:

**8.1. Productivity Software:** Tools like project management software and office suites streamline workflows, facilitate team collaboration, and enhance task management efficiency. They enable remote work capabilities and ensure seamless communication among team members.

**8.2. Collaborative Platforms:** Digital platforms such as cloud-based storage solutions and virtual meeting(Fig:8) software enable real-time collaboration and data sharing among geographically dispersed teams. These platforms improve communication, increase productivity, and support agile project management practices.



**Fig:8**



**8.3. E-commerce Platforms:** Digital tools in e-commerce enable businesses to establish online storefronts, manage inventory, process payments securely, and provide personalized shopping experiences to customers. These platforms expand market reach and optimize customer acquisition and retention strategies.

**8.4. Analytics Tools:** Data analytics tools leverage AI and machine learning algorithms to analyze large datasets, uncover actionable insights, and support data-driven decision-making across business functions. These tools enhance operational efficiency, optimize marketing campaigns, and improve customer segmentation strategies.

## CASE STUDIES

### Case Study 1: Telemedicine in Rural Healthcare in Tamil Nadu

#### Background:

Telemedicine has significantly improved access to healthcare in rural and underserved areas where traditional medical facilities are limited.

#### Details:

In a study conducted by the Tamil Nadu Health System, telemedicine services were implemented in rural communities across the state. Patients could consult with specialists remotely via video conferencing for conditions ranging from chronic diseases to mental health issues. The study found that telemedicine not only reduced travel time and costs for patients but also improved their overall health outcomes by providing timely access to specialists who were otherwise inaccessible.

#### Example:

The Tamil Nadu government has been proactive in integrating telemedicine services in rural areas through initiatives such as the eSanjeevani OPD, a national telemedicine service. This platform allowed patients in remote villages to connect with doctors from major cities like Chennai and

Coimbatore, addressing a wide range of health concerns, including diabetes management, cardiovascular diseases, and mental health support.

**Impact:**

The implementation of telemedicine in Tamil Nadu resulted in better management of chronic conditions, reduced emergency room visits, and improved patient satisfaction. It demonstrated how technology could bridge geographical barriers and improve healthcare access, particularly in rural and remote areas.

## **Case Study 2: Virtual Reality (VR) in Medical Education in Tamil Nadu**

**Background:**

Virtual reality (VR) technology has been increasingly integrated into medical education to enhance learning experiences.

**Details:**

The Tamil Nadu Dr. M.G.R. Medical University introduced VR simulations for medical students to practice surgical procedures in a controlled, immersive environment. The VR simulations allowed students to interact with realistic anatomical models and practice surgical techniques repeatedly without the need for cadavers or live patients. This approach provided students with hands-on experience in a safe and educational setting, improving their procedural skills and confidence before entering clinical practice.

**Example:**

The medical university collaborated with technology partners to develop a VR lab where students could engage in detailed surgical simulations. This included modules for various specialties such as cardiothoracic surgery, neurosurgery, and orthopedics. By using VR, students were able to gain a deeper understanding of human anatomy and surgical procedures, enhancing their practical skills significantly.



**Impact:**

The use of VR in medical education in Tamil Nadu led to more engaged learning experiences, better retention of knowledge, and increased surgical proficiency among students. It exemplifies how technology can transform traditional educational methods, making learning more interactive, accessible, and effective.

**Conclusion:**

The significance of modern technological advancements is evident in various facets of contemporary life. From improving healthcare and education to revolutionizing communication, transportation, and the economy, technology continues to shape and enhance our world. IIoT, AI, and digital tools are integral components of the modern technological landscape, driving innovation, efficiency, and connectivity across healthcare, education, customer service, finance, and beyond. These advancements continue to reshape industries and improve the way individuals, businesses, and organizations operate in today's digital age. This chapter showcases two case studies in details for the benefit of the readers.

As we look to the future, it is crucial to embrace these advancements and address the challenges they present, ensuring that the benefits of technology are accessible to all.

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## **Classification technique for face-spoof detection in artificial neural networks using concepts of machine learning**

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### **Abstract**

In biometric technology, face recognition techniques are considered the most significant research area. This technology is abundantly used in security services, smart cards, surveillance, social media, and ID verification. The number of countermeasures is gradually increasing, and many systems have been initiated to distinguish genuine access and fake attacks. In our paper, we propose a Convolutional Neural Network (CNN), which can obtain fine distinctions and abilities in a supervised manner. Deep convolutional neural networks have prompted a progression of breakthroughs for image classification. This paper introduces various architectures of CNN for detecting face spoofing using many convolutional layers. We have used VGG-16 under Convolutional Neural Networks (CNN) architecture in the proposed system for learning about the feature classification.

### **Keywords**

Face Spoofing Techniques; Feature Classification; Convolutional Neural Network (CNN); VGG-16; Machine Learning

### **I. INTRODUCTION**

A biological system developed by the composition of neurons may be intended as ANN. Artificial neural network (ANN) are computed by the research of an animal's central nervous system. Hence we can say that the ANN is a biological neural networks which create the constitution of animal brains, so it may be a good pattern with flexibility to machine learning. A neural network may be understood by a graph in which neurons is represented by nodes and arcs in the nodes of graph. A neural network may be defined as an algorithm of machine learning by which we can understand about somebody neurons. Neurons are presents in the human brain. So the human brain sends some

electrical and chemical signals. Synapses connect these neurons to the neurons of the rest body and allow to pass signals. This man made neural network is additionally referred to as information science technique. It works just like the way that human brain process information, ANN used to classify information to predict outputs which is expected from a given input and to define the cluster data. ANN is a computerised model to receive inputs and deliver outputs to activate the predefined function. ANN uses different layers of mathematical processing to make sense of the information. This network has millions of artificial neurons called units. The data will be received from outside world by input layer's from the input unit the data passes through one and more hidden layers and this layer sends the data to output unit where the network processes the data.

Face detection is one of the most widely used techniques which are mainly used for the security purpose. In these days, crimes are increasing at a very high rate, so these methods are very useful to keep a check on the people in various fields such as industries, banks hospitals and much more. These methods can also be used in a number of applications such as biometric study; content based coding of images and videos, surveillance and human computer interaction (HCI). Due to the presence of similarity among some faces because of their colour, age, gender, the execution of face detection technique proved very complex. The problems which occur during the execution of this method are image quality, background, expressions and the environmental changes. The technique of face detection is mainly based on the facial characteristics in the light weighing physiological properties recognition. The false faces identified as positive and negative false faces. Real faces having restricted variation are called positive faces while negative face involves dummy, spoof faces on images and much more. The documents are classified in three types: unsupervised, supervised and semi supervised methods. The automatic text classification has been analyzed extensively and demonstrates excessive success in this region. This classification approach involves machine learning algorithms.

## **II Significance and Relevance**

A few biometric traits evolved as the field progressed and occasionally disappeared. To be sure, face recognition is one biometric characteristic that has stood the test of time. Face characteristics are distinctive. Face-based authentication offers a more reliable yet contactless user identity than iris and fingerprint scanning. Face biometrics, which provides a secure identity and forms the basis of an inventive biometric system, has thus emerged as the preferred study area. However, printed face images or other artifacts can be used to fake invader challenges on face biometric systems,

making them highly vulnerable. Spoofed faces can stop the face recognition system from working correctly. Various researchers concentrate on identifying facial liveness to prevent attacks on the biometric system.

Therefore, it is crucial to categorize the current research on the biometric of Face liveness detection to address how growing technologies might provide explanations to lower the emerging hazards. Facial recognition-based applications have made tremendous progress due to artificial intelligence (AI) techniques. Deep learning has advanced in recent years. The use of artificial neural networks or convolutional neural networks (CNNs) in many computer vision tasks has been extensively studied especially with the advancement of robust hardware and enormous data sets. Image categorization and object detection were successfully solved using CNNs. The existing body of literature on Face liveness detection concentrates on advances in hardware and software and various categorization methods employing ML- and DL-based methodologies. It is essential to do a comparative examination of these procedures based on several assessment criteria. It is necessary to thoroughly examine the pertinent articles and academic publications to understand what research has been directed toward biometric and face liveness detection. This study seeks to provide information on a range of datasets, performance metrics, face spoofing attacks, and methods for detecting the liveness of a face.

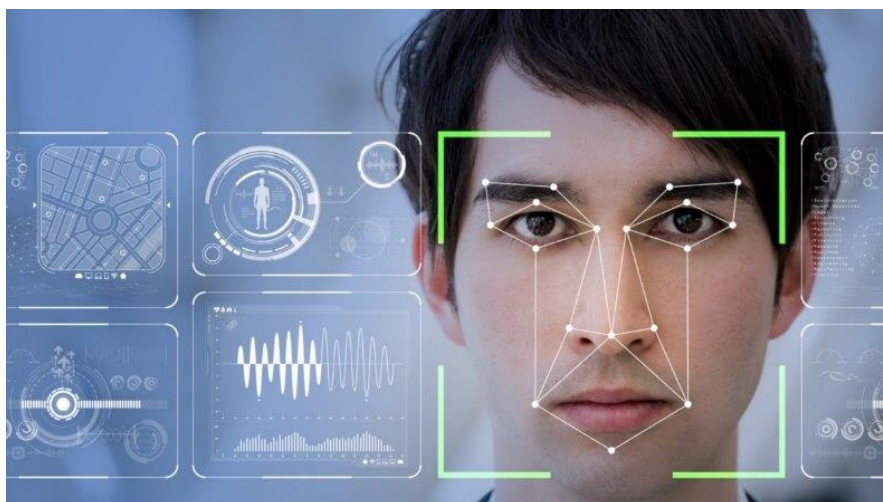
### **III Evolution of Face Biometric Liveness Authentication**

Fingerprints and other biometric features were used in previous biometric identification research. Semi-automated facial recognition systems that were distinctive to each person were initially proposed in 1988. Early in 2010, a face-liveness detecting algorithm was created. Since 2013, Face Liveness Detection (FLD) research has extensively used machine learning (ML) technologies.

The potential of ML to forecast and classify data is a key justification for using these algorithms. The face-liveness identification techniques include logistic regression, SVM, AdBoost, and Random Forest. The progress of face biometric authentication is seen in Figure 1. Huge volumes of information are processed using deep learning (DL) algorithms. The researchers started utilizing deep learning technology when facial liveness detection algorithms were introduced. Researchers have adopted DL methods for face liveness identification because they offer superior features to conventional handmade features. Some academics began working on the pre-trained networks

used for face liveness detection, including convolutional neural networks (CNN), ResNet50, Inception model, VGG16, VGG19, GoogleNet, and AlexNet.

Face recognition is a rapidly growing field in machine learning, and it has a wide range of applications in various industries. From security and surveillance to entertainment and social media, face recognition technology can revolutionize how we interact with technology. Face recognition is an identification method that uses the individual's face's distinctive features to identify them. The majority of facial recognition systems operate by matching the face print to a database of recognizable faces.



The technology behind face recognition is based on deep learning, a subset of machine learning that involves training artificial neural networks to recognize patterns in data. A deep learning model can be trained to recognize faces by being fed a large dataset of images of faces. The model learns to recognize patterns in the images, such as the shape of the eyes, nose, and mouth, and it can then use this knowledge to recognize faces in new images.

Convolutional neural networks are one of the most widely used algorithms for facial recognition (CNNs). These are a particular class of neural network that excel at image recognition tasks. CNNs are made up of many layers of artificial neurons that have been taught to recognise aspects in a picture. For example, the first layer of a CNN might be trained to recognize edges, while the second layer might be trained to recognize shapes, etc. This hierarchical approach allows the CNN to build a more complex understanding of the image, and it allows it to recognize faces with high accuracy.

Another popular algorithm for face recognition is called deep face recognition. This method is based on a deep neural network that is trained to recognize faces by being fed a large dataset of images of faces. The deep neural network learns to recognize patterns in the images, such as the shape of the eyes, nose, and mouth, and it can then use this knowledge to recognize faces in new images.

One of the main advantages of face recognition technology is its ability to recognize faces accurately, even when they are partially obscured or in poor lighting conditions. This makes it a useful tool for security and surveillance applications, where it can be used to identify people in a crowd or to track people as they move through a facility.

#### **IV Face spoofing detection using local binary patterns and fisher score**

Another advantage of face recognition technology is its ability to recognize faces quickly and efficiently. This makes it a useful tool for various applications, such as social media and entertainment. For example, Facebook uses face recognition technology to suggest tags for people in photos. The technology is also used in video games to allow players to control their characters with their faces.

Despite the many advantages of face recognition technology, there are also some concerns about its potential impact on privacy and security. Face recognition technology raises the possibility of tracking people without their knowledge or agreement, which is a worry. There are also worries that groups of individuals would be the target of discrimination due to technology.

Researchers and decision-makers are creating standards and laws for facial recognition technology to allay these worries. For instance, the General Data Protection Regulation (GDPR), which was enacted by the European Union, contains restrictions pertaining to the use of face recognition technology. Overall, face recognition technology is a rapidly growing field in machine learning, and it has the potential to revolutionize the way we interact with technology. However, it is important to consider the potential impact of this technology on privacy and security and to develop guidelines and regulations to ensure its safe and responsible use.

#### **Conclusion**

This paper introduces the classification technique of face spoof detection based on artificial neural network (ANN). Face spoof detection technique was used to detect face for biometric



authentication. We have classified many types for face spoof detection and identification. In this approach we use the real and fake face detection and find the best accuracy of real face. SVM and KNN both are the classifier of machine learning algorithm which is used for face detection to find out the best accuracy. For the face biometric system, pre trained CNN architecture is used in various ways. First, we used the classification by SVM and the convolutional neural network with AlexNet as well as ResNet-50 for feature extraction. Second, we used the AlexNet model's transfer learning for classification and feature extraction. First, we assessed Alex Net's performance in extracting learnt features and classifying data using support vector machine for multi class. AlexNet is a pre-trained convolutional neural network. The effectiveness of a CNN ResNet-50 with pre-trained CNN for extraction of aCNN ResNet-50 with pre-trained CNN for extraction of learned features employed with SVM classifier was then assessed. Third, we assessed how well pre-trained CNN AlexNet performed in terms of transfer learning for the classification test.

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## **The Impact of Positive Psychology on Student Well-being and a Better World**

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### **Abstract:**

The rise in global competition has contributed to an increase in depression cases among teenagers and young adults. This study explores the relationship between implementing positive psychology, academic performance, and the overall well-being of individuals within this age group. The background for this research derives from the heightened use of technology and the diminishing interaction between working parents and their children, resulting in a disconnection between the two generations. The methodology involves a comprehensive investigation into the application of positive psychology among students and its potential to significantly influence the field of education. The findings emphasise the necessity of positive psychology as a pivotal factor in addressing the current challenges educators face and highlight the urgency of fostering a positive classroom environment. Through this research, we seek to provide insights into the critical role of positivity and psychology in combating depression and enhancing the academic performance of students.

**Keywords:** article critique, depression, positivity, psychology

## **Introduction-**

Arvind, a senior high school student, faces challenges in achieving satisfactory academic performance. Despite being recognised as a bright student, his scholastic outcomes are not meeting expectations. This is a common phase of uncertainty experienced by adolescents, who may feel apprehensive about being misjudged based on their actions. Extremes on either end of the spectrum can pose significant risks. In today's competitive environment, children must navigate evident and subtle pressures to conform to societal standards. How can we offer effective support to students like Arvind?

The relevance of positive psychology is highlighted in its ability to comprehend the subconscious cognitive processes of adolescents and young adults in today's society. While significant attention is given to pedagogical methodologies, goal setting, and diverse teaching approaches, it is imperative to discern whether these adequately address the needs of students. Is the education sector sufficiently attentive to this concern? It is essential to recognise that possessing a B.Ed. degree does not inherently qualify an individual to influence the minds of future generations. The scope of influence extends beyond conventional classroom practices, warranting a more comprehensive understanding of the student's requirements.

The leaders of tomorrow must be endowed with a positive mindset to cultivate a better and more optimistic future. This can be achieved by exposing young minds to positivity. The competitive mindset should be expunged from the consciousness of young individuals, and the focus redirected towards effecting positive change.

Ms. Renu, Arvind's Chemistry instructor, communicates regularly with his parents to provide updates on his academic progress. Frequently, she indicates that Arvind's effort in chemistry is less than optimal. However, it is essential to consider whether there are underlying reasons influencing his current performance. Conversely, Ms. Meera, the mathematics instructor, consistently observes stronger performance from Arvind in mathematics than Science. This prompts the question of what pedagogical strategies Ms. Meera employs are distinct from those utilised in the Chemistry instruction.

During English classes, Arvind is observed diligently completing his Physics record book, citing fear of

reprimand from the teacher as a motivator for his actions. Consequently, while his Physics and Chemistry results at the end of the term outweigh his performance in other subjects, it raises the query of whether these achievements allow for comprehensive student development. While academic marks indicate improvement, it is pertinent to question whether this aligns with the holistic aims of education. The prevalent emphasis on grades warrants reconsideration, and a shift toward an educational paradigm that cultivates a nurturing, fear-free, and intellectually emancipated environment for students is paramount.

The objective mind tends to take precedence in most situations, often leaving the subjective mind overlooked. However, as educators, it is imperative to consider nurturing the subjective minds of students. A mindset solely focused on objectives will likely produce outcomes aligned with those objectives, exemplified by learning objectives. Nevertheless, a world driven solely by objectives poses a genuine risk of compromising our ethical principles, as our morality becomes intrinsically linked to pursuing a goal. This could result in a society comprising individuals driven only by desired results.

Allow me to present the scenario of Mr. John, a biology instructor. Upon entering the classroom, he outlines the learning objectives on the board, specifically focusing on identifying the components of a rose flower. While the majority of the students engage in the task of comprehending and labelling the parts, one student, Susie, displays disinterest in the class due to her parents' ongoing divorce proceedings. Consequently, her presence in the class is merely physical, with minimal contribution to the understanding or labelling the parts. 99% of students in the classroom have met the objective, but doesn't the 1% matter? Our education system indicates that most people should grasp the lesson, but is it fair today? The world's need should be to bring in more teachers who understand positive psychology than result-oriented people. Shouldn't the education system redefine its role and take a more comprehensive approach, shifting from competition and immediate results to a more progressive human being and society?

Methods;

I believe that it is essential for teacher training to prioritise the inclusion of psychology papers, specifically focusing on positive psychology, to foster a more positive and nurturing learning environment. There should be a

mandatory emphasis on educators continuously revising themselves in the theories of positive psychology, ensuring that it becomes deeply embedded within the educational system. This approach is crucial to ensuring that students enjoy every phase of their education and that their overall well-being is considered a necessity rather than a choice.

Furthermore, it is imperative to consider the impact of the school environment on students' well-being. Teachers, as facilitators, should also adopt a mindset rooted in positive thinking, as they cannot effectively support and nurture their students from an empty emotional or psychological state. By prioritising positive psychology in teacher training and actively promoting a positive school environment, we can ultimately contribute to the holistic development and well-being of both educators and students.

#### Conclusion:

The integration of positive psychology into teaching methodologies is poised to contribute significantly to the creation of a more secure and improved global community. The pervasive influence of psychology is evident in our perceptions and interactions. Finland's distinction as the top-ranked country in the UN World Happiness Report is attributed to the genuine sense of contentment and safety experienced by its populace. Many nations have followed Finland's lead in prioritising happiness as a fundamental catalyst for societal enhancement. Thus, to cultivate a generation of global citizens, it is imperative to educate the youth using the principles of positive psychology. Martin Seligman, regarded as the pioneer of Positive Psychology, aptly proposed, "The aim of positive psychology is to catalyse a change in psychology from a preoccupation only with repairing the worst things in life to also building the best qualities in life".

## **Consumer Behaviour Models**

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### **Abstract:**

This chapter studies the consumer behavior models to understand the factors influencing purchasing decisions. The models explored are: the Learning Model (basic and learned needs), Psychoanalytical Model (unconscious motives and emotions), Sociological Model (social group influences), Economic Model (rational decision-making and utility), Engel-Kollat-Blackwell Model (five-stage decision process), and Black Box Model (internal and external stimuli). Analyzing these models provides insights into consumer motivations, aiding marketers in developing effective strategies.

**Key words:** Consumer Behaviour, Consumer behaviour models, Consumer motivations.

### **Purpose:**

The purpose of this study is to analyze the consumer behavior models to develop a deeper understanding and align strategies with consumer decision-making processes.

### **Methodology:**

The methodology used for this study is second data. The author has referred to various books, websites, newspaper and prepared this chapter.

### **Findings:**

#### **Who is a consumer?**

Every day, we purchase a variety of goods to consume in our life. These can be used to support our way of living, start our own businesses, or indulge in luxury. John F. Kennedy once said, "Consumer, by definition, includes all of us." In one way or another, everyone is a consumer. As a result, being a consumer grants you specific rights, which must be upheld and safeguarded.

The Consumer Protection Act, 2019 is the law in India that governs consumer rights.

A consumer is defined as an individual who: Purchases goods for a price that has been paid, promised, partially paid, or partially promised, including under deferred payment arrangements. This definition encompasses anyone who uses such goods, excluding those who buy them for resale or commercial purposes, provided that the use is approved by the purchaser.

### **Who is a digital Consumer?**

A digital consumer uses technology to buy and sell goods and services, engaging with brands through social media, websites, shopping platforms, and ads. The 2020 shift to online platforms highlighted the digital realm's strength in 2021, driven by speed, convenience, and competitive pricing.

India has seen a significant rise in digital adoption, surpassing the U.S., China, and the E.U. Many Indian consumers now prefer online shopping, with 65% buying products online that they previously purchased in stores. Online retail in India grew by 25% while the offline market shrank. Most offline buyers use online resources for their purchasing decisions.

Businesses have quickly adapted to these changes, developing innovative and agile strategies. As consumer behaviors evolve, driven by the pandemic and a preference for digital lifestyles, brands must future-proof their operations with agile, customer-centric approaches.

With 25 million new smartphone users in India each quarter, businesses must continuously update their digital strategies. Consumers are increasingly using streaming services, live commerce, virtual try-ons, podcasts, and contactless payments. To meet these evolving preferences, businesses need seamless omnichannel strategies and immersive technologies, blending online and offline experiences to drive growth in the digital era.

### **Definition of Consumer Behaviour:**

Consumer behavior refers to the study of how individuals, groups, or organizations make decisions about acquiring, using, and disposing of goods, services, or ideas to satisfy their needs and wants.

It encompasses a wide range of factors that influence these decisions, including psychological, social, cultural, and economic aspects.

### **Consumer behaviour Models**

1. Learning Model
2. Psychoanalytical Model
3. Sociological Model
4. Economic Model
5. Engel-Kollat-Blackwell (EKB) Model
6. Black Box Model

**1. The Learning Model** of consumer behavior is based on the concept that consumers' purchasing decisions are influenced by both their basic needs and their learned needs. Here's a detailed explanation:

#### **Basic Needs:**

Basic needs are essential for survival and well-being. These needs include physiological requirements like food, water, shelter, and safety. In the context of consumer behavior, basic needs drive initial purchase decisions as they address fundamental human necessities.

#### **Learned Needs:**

Learned needs are secondary desires that consumers develop over time through experiences, social interactions, cultural influences, and marketing messages. These needs go beyond basic survival and are often linked to emotions, aspirations, and lifestyle choices.

#### **Hierarchy of Needs:**

The Learning Model is often associated with Abraham Maslow's Hierarchy of Needs, which categorizes human needs into five levels: physiological, safety, love/belonging, esteem, and self-actualization. According to Maslow, individuals prioritize fulfilling lower-level needs before moving to higher-level needs.

#### **Consumer Behavior in the Learning Model:**

Consumers first seek products or services that satisfy their basic physiological and safety needs. For example, they buy food to satisfy hunger or purchase insurance for financial security.



Once basic needs are met, consumers focus on fulfilling learned needs that enhance their quality of life, self-esteem, social status, or personal growth. This may include buying luxury items, seeking experiences, or purchasing products that reflect their values and aspirations.

**Marketing Implications:**

Marketers use the Learning Model to understand consumer motivations and tailor marketing strategies accordingly. They create campaigns that appeal to both basic and learned needs, leveraging emotional triggers, social validation, and lifestyle branding.

Product development and innovation also align with the Learning Model by addressing emerging learned needs and evolving consumer preferences. Companies adapt their offerings to match changing societal trends, technological advancements, and cultural shifts.

**Example:**

Consider a smartphone company launching a new model. The marketing campaign may highlight the device's advanced features (basic needs like communication and connectivity) while also emphasizing its status symbol, innovative design, and social influence (learned needs like prestige and self-expression).

The Learning Model explains why consumers upgrade to newer versions of products even when their basic functional needs are already met. They seek novelty, status, and the satisfaction of learned desires associated with the latest technology.

**2. The Psychoanalytical Model** of consumer behavior: It is based on Sigmund Freud's theories of psychoanalysis, which delve into the unconscious mind and its influence on behavior. Here's a detailed explanation of the model:

**Unconscious Motives:**

According to the Psychoanalytical Model, consumers are driven by deep-rooted motives that operate at the unconscious level. These motives can stem from hidden fears, desires, childhood experiences, societal influences, and personal conflicts that individuals may not be consciously aware of.

**Emotional Triggers:**

Consumers' purchase decisions are often triggered by emotions rather than rational analysis. Emotions such as desire, fear, guilt, pleasure, and anxiety play a significant role in shaping consumer behavior. These emotions are tied to unconscious motives and can drive impulsive or irrational buying decisions.

**Symbolism and Meaning:**

Products and brands hold symbolic meanings that resonate with consumers' unconscious desires and identities. Consumers may project their inner desires, aspirations, and self-perceptions onto products, using them as symbols to express their personalities, status, and values.

**Marketing Strategies:**

Marketers leverage the Psychoanalytical Model by tapping into consumers' subconscious desires and emotions. Advertising and branding campaigns often use imagery, storytelling, and symbolism to evoke specific emotions and create psychological connections with consumers. Techniques such as celebrity endorsements, nostalgia marketing, sensory branding, and persuasive messaging are employed to appeal to consumers' unconscious motives and trigger emotional responses that drive purchasing behavior.

**Example:**

A luxury perfume brand may use the Psychoanalytical Model in its marketing strategy. The advertising campaign might feature elegant visuals, seductive narratives, and evocative music to create an emotional experience for consumers. The brand associates its perfume with feelings of romance, sophistication, and self-indulgence, tapping into consumers' deep-seated desires for beauty, allure, and luxury.

The use of celebrity endorsers in such campaigns adds a layer of aspiration and identification, as consumers unconsciously associate the celebrity's image and lifestyle with the desired emotions and qualities represented by the perfume.

**Subconscious Influences:**

The Psychoanalytical Model recognizes that consumers may not always consciously understand why they are drawn to certain products or brands. Their decisions are shaped by subconscious influences, including past experiences, social conditioning, cultural norms, and psychological needs for validation, belonging, and self-expression.

In summary, the Psychoanalytical Model highlights the powerful role of unconscious motives, emotions, and symbolism in consumer behavior. It underscores the complexity of human decision-making and the need for marketers to understand and appeal to consumers' deep-seated desires and psychological drivers.

3. **The Sociological Model** of consumer behavior focuses on how social groups and societal influences impact individuals' purchasing decisions. Here's a detailed explanation of this model:

**Social Groups Influence:**

The Sociological Model posits that consumers make buying decisions based on their membership in various social groups, such as family, friends, work colleagues, cultural communities, and reference groups. These groups influence individuals' preferences, behaviors, and purchase choices by setting norms, values, and expectations.

**Norms and Expectations:**

Consumers conform to social norms and expectations within their social groups when making purchase decisions. These norms dictate what products or brands are deemed acceptable, desirable, or appropriate within specific social contexts. For example, certain professions or social circles may have expectations regarding attire, gadgets, vehicles, or leisure activities.

**Peer Influence:**

Peer pressure and social influence play a significant role in consumer behavior according to the Sociological Model. Individuals may be motivated to purchase certain products or brands to fit in with their peer group, gain social approval, or avoid social stigma. Consumption patterns are often shaped by observations of others' behaviors and preferences.

**Group Identity and Affiliation:**

Consumers derive a sense of identity, belonging, and status from their affiliation with social groups. They may express their group membership through consumption choices, using products and brands as symbols of belonging, social identity, values, and aspirations. For example, sports fans may buy team merchandise to demonstrate loyalty and affiliation.

**Word-of-Mouth and Social Networks:**

Word-of-mouth recommendations, social endorsements, and online social networks significantly influence consumer decisions under the Sociological Model. Positive experiences shared by peers, influencers, or opinion leaders can sway individuals' perceptions and preferences, leading to brand adoption, product trials, or repeat purchases.

**Example:**

A fashion brand strategically aligns with popular influencers and celebrities who have a strong following among its target audience. These influencers showcase the brand's products on social media platforms, generating buzz, social proof, and aspirational appeal. Consumers within the influencers' social networks are more likely to emulate their style choices and purchase the endorsed products to align with the perceived social status and trends.

**Cultural and Subcultural Influences:**

Cultural values, traditions, beliefs, and subcultural identities also influence consumer behavior within the Sociological Model. Different cultural groups may prioritize certain product attributes, aesthetics, symbolism, or functionality based on their cultural context, heritage, and collective identity.

Overall, the Sociological Model emphasizes the role of social groups, peer dynamics, social identity, and cultural context in shaping consumer preferences, attitudes, and purchasing behavior. Marketers leverage insights from this model to create targeted strategies that resonate with consumers' social affiliations, aspirations, and socialization processes

**4. The Economic Model** of consumer behavior focuses on rational decision-making driven by factors like price, income, and utility.

**Utility Maximization:** Consumers aim to maximize their satisfaction (utility) within their budget constraints by making rational choices.

**Marginal Utility and Diminishing Returns:** The model considers diminishing marginal utility, where additional satisfaction decreases with each additional unit consumed. Consumers allocate spending to maximize total utility.

**Rational Decision-Making:** Consumers assess costs and benefits, comparing prices, quality, and features to find the best value within their budget.

**Income and Budget Constraints:** Higher incomes enable more expensive purchases, influencing consumption patterns. Budget constraints require trade-offs between goods and services.

**Price Elasticity of Demand:** This measures how quantity demanded responds to price changes. Price-sensitive consumers adjust their purchases based on price changes.

**Consumer Surplus:** The difference between what consumers is willing to pay and the actual price paid, representing net benefit and economic welfare.

**Market Equilibrium and Efficiency:** Markets allocate resources based on consumer preferences, producing goods and services that maximize overall welfare.

**Example:** A consumer choosing between two smartphones will evaluate the utility relative to the price, selecting the one with higher utility per dollar spent.

**Implications for Marketing:** Marketers use the Economic Model to understand consumer preferences, price sensitivity, and purchasing behavior. Strategies like pricing, promotions, and product differentiation are designed to appeal to rational decision-making and optimize value propositions.

**5. Engel-Kollat-Blackwell (EKB) Model** of consumer behavior outlines a five-stage decision process that consumers go through before purchasing a product or service.

**Awareness:** During this stage, consumers view advertisements from a business and become aware of their need, desire, or interest, to purchase what they've just discovered.

**Information Processing:** After discovering a product or service, a consumer begins to think about how the product or service relates to their past experiences or needs and whether it will fulfill any current needs.

**Evaluation:** At this point, consumers will research the product they've discovered and research options from competitors to see if there is a better option or if the original product is the best fit.

**Purchasing Decision:** A consumer will follow through with a purchase for the product that has beat out competitors to provide value. A consumer may also stop the process if they change their mind.

**Outcome Analysis:** After making a purchase, a customer will use what they've bought and assess whether their experience is positive or negative. After a trial period, they'll keep a product and maybe decide to become repeat customers or express dissatisfaction and return to stage three.

This model applies to businesses that have many competitors with similar products or services. If your product market is highly saturated and competitive, the goal is to outshine your competitors by meeting customers at every stage of their journey.

**6. Black Box Model** of Consumer Behaviour sometimes called the Stimulus-Response model, says that customers are individual thinkers that process internal and external stimuli to make purchase decisions. The graphic below illustrates the decision process.

It may look complex, but it's a fairly straightforward path. A consumer comes into contact with external stimuli from your business' marketing mix and other external stimuli, and they process it in their mind (black box). They relate the external stimuli to their pre-existing knowledge, like personal beliefs and desires, to make a decision.

In short, this model says that consumers are problem solvers who make decisions after judging how your product will satisfy their existing beliefs and needs. Since consumers only follow through with a purchase after understanding how a product relates to their experiences, this model can benefit businesses selling products that go along with a lifestyle.

**Example:** Different brands sell their cars to specific types of buyers. Jeeps and Subarus are for those that engage in outdoor activities and need a sturdy, reliable vehicle. At the same time, Mercedes Benz and Lexus' are marketed to those who want luxurious driving experiences. Even though the machinery is relatively similar, these brands speak to the pre-existing life values that customers have, and they promise that purchasing their vehicle will uphold their values.

### **Case study**

#### **Clarity Amidst Chaos: Tackling Consumer Confusion in Marketing**

Nokia, once a dominant force in the mobile phone industry, faced a series of missteps that led to its decline in the smartphone market. Despite developing a smartphone prototype in 2004, Nokia missed early opportunities by prioritizing traditional mobile phones over smartphones. The company's focus on hardware over software resulted in a weak app ecosystem, unlike rivals Apple and Google, who invested heavily in app development. Nokia's slow adoption of touchscreen technology, sticking with physical keypads while competitors offered intuitive touchscreens, further put it at a disadvantage. Resistance to change and innovation, reliance on the outdated Symbian OS, and reluctance to embrace new platforms like iOS and Android hindered Nokia's ability to adapt. Internal cultural barriers, including a hierarchical and conservative structure, stifled external talent and fresh ideas, impeding innovation. Nokia's failure to align with consumer demand for advanced smartphones and seamless internet integration allowed competitors to capture market share. Recently, Nokia launched a new line of smartphones, but consumer confusion about the products' features and benefits has impacted sales and brand positioning. In conclusion, Nokia's inability to adapt to the rise of smartphones, develop a strong app ecosystem, embrace touchscreens, foster innovation, and align with consumer trends significantly contributed to its decline in the mobile phone industry.

### **Questions:**

1. What are the primary challenges faced by Nokia due to consumer confusion?

Hint: Nokia is experiencing challenges in product positioning, sales, and brand differentiation due to consumer confusion about their smartphone offerings.

2. How can traditional consumer behavior models help in understanding consumer confusion?

Hint: Traditional models like the Stimulus-Response model can shed light on how consumers process marketing stimuli, while the Engel-Kollat-Blackwell model can explain the decision-making process amidst confusion.

3. What role does perception play in shaping marketing strategies?

Hint: Perception influences how consumers perceive brands and products. By aligning marketing strategies with positive perceptions and addressing negative perceptions, companies can enhance brand reputation and customer loyalty.

4. What strategies can Nokia adopt to mitigate consumer confusion?

Hint: Nokia can simplify product messaging, provide clear product differentiation, offer comprehensive product education, and enhance customer support to address consumer confusion effectively.

5. How can contemporary consumer behavior models like the Customer Decision Journey contribute to resolving consumer confusion?

Hint: Contemporary models can help Nokia understand post-purchase behavior, gather customer feedback, and refine marketing strategies to meet evolving consumer needs and expectations.



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## **Transformation in Marketing Trends throughout the Current Competitive Landscape**

Dr. Sujay Khadilkar

### **Abstract**

Marketing is essential for businesses since it adds vitality to the company and significantly impacts the brand and its value. The fundamental values and beliefs of marketing continually evolve in response to the changing circumstances. As customers acquire more expertise, marketing efforts that involve customer touch become increasingly crucial for business conversion. Currently, the marketing field is shifting its focus from products and customers to the essence of human nature. Marketing currently holds a prominent place, evident from the success of modern enterprises.

### **Introduction**

The field of Information Technology has had a significant impact on the power that consumers have in shaping the market. The impact on the customer has swiftly transformed with the expansion of Information technology. The consumer who was previously passive has now become an active producer. Modern consumers have the ability to share their product experiences online, and they can critically analyze the same product utilizing internet reviews as a forum. Rapid dissemination of such feedback on the internet can reach a broad audience, thereby impacting the company's reputation. It is anticipated that the financial services would become more efficient, faster, and transparent with the implementation of new technologies such as Artificial Intelligence (AI). Additionally, it is projected that banks will also enhance their development.

Novel services and products that are more efficient and economical compared to previous offerings. Extensive research has been conducted on the adoption of technology by end users and the various factors that influence this adoption. However, there is a scarcity of empirical studies that investigate the factors contributing to the success or resistance of users in adopting Internet Banking technology. As compared to the 90s, people today are more educated, more conscious of their wants and demands, more precise in their choice of products and services, and more aware

of the availability of products and services. This has led to a change in the Indian market and the tendency has begun to move towards customized products and services. With a growth in purchasing power, customers do not mind paying a relatively higher amount for the choice of their goods and services as long as it is suited to their wants. The constant introduction of new products and the continuous expansion of product lines are driven by this underlying factor. Marketers are endeavoring to align the rate of their product development with the rate of shifts in consumer preferences.

Accessible information should also be genuine and firmly based for the customer to consume. These play a significant role in decision-making while making any transaction. In the upcoming decades, advancements in information and technology will revolutionize the principles of competition, bring groundbreaking business models, challenge existing market assumptions, and foster a global network of interconnected firms.

Modern marketing revolves around the provision of important information or material to both existing and new clients, with the aim of establishing trust, enhancing brand recognition, increasing awareness, and fostering positive sentiment. In other words, the main objective of any organization is to cultivate relationships rather than focusing solely on aggressive sales tactics.

#### Developing market research surveys

Market trends are a direct reflection of the factors that customers deem significant. Lack of awareness on the rapidity of market trends can lead to decreased revenue, weakened branding, and consumer hesitancy for a company. When there is an influx of new items and increased competition in the market, or when the spending power of the consumer base changes, a corporation must adapt its products and marketing strategies accordingly.

Market research surveys are crucial to track market developments for numerous reasons:

1) The act of monitoring market trends provides value that is evident in the sales of products. They are also evident in savings. Companies can achieve cost savings by accurately identifying the goods that are experiencing strong sales performance and those that are not. Additionally, they can reduce costs by gaining insight into the reasons behind consumer reluctance to purchase their items during a specific quarter. Once a corporation obtains the knowledge, it can implement

appropriate modifications to its products and/or pricing. Market research surveys can provide valuable insights that can be used to alter marketing and distribution strategy.

2) Relevance - Market research surveys offer pertinent information about individual items, unlike data obtained from end-of-quarter sales or annual reports. Additionally, they provide crucial insights on trends. If a company launches a new line of house cleaning goods and experiences limited success in selling some things, managers must promptly gather information regarding the underperforming products. This optimizes efficiency and enables the extraction of pertinent data for making targeted sales and product innovation choices.

3) Market research surveys provide direct information on product quality, unlike financial data on sales and profits. When customers are queried about the quality of products, they are more inclined to provide precise information regarding product characteristics.

4) Surveys exclusively supply raw data, without transforming it into information or knowledge. The responsibility of transforming data into information and knowledge lies with the individual who is designing and analyzing the data. Consequently, it is imperative to meticulously and accurately craft survey questions. After collecting data from consumers, it is transformed into information in the form of charts and graphs. However, it is important to note that the information provided is merely factual, whereas true knowledge is derived from profound understanding and personal encounters.

Here are several significant trends that an organization should consider and find beneficial:

1) The distribution of content through social media platforms is experiencing significant growth.

A growing number of marketers are utilizing social media platforms to advertise their brands and engage in reputation management, resulting in a rapid evolution of this field. Based on the survey data, the utilization of social media for content distribution among marketers was 74% in 2021, which is a decrease from 87% in 2012 and an increase from approximately 96% in the previous year.

2) The Decline of Desktop Computing

While it may be an exaggeration to say that the desktop is completely dead, in 2013 it was surpassed by the combination of smartphones and tablets as the dominant platform for e-

commerce. "Mobile-first design" became popular as one of the year's trending terms. "Targeting mobile users will no longer be considered an additional component of the marketing mix, but rather a crucial factor for the success of a campaign," stated Jud Bowman, the CEO of Appia, a mobile ad network, in an interview with CMO.com.

### 3) Green Washing Subsidies

The rise of green and sustainable business practices has sent a tsunami through the enterprise. While many organizations have made an earnest attempt to become greener, it's also no bulletin that many have attempted to use marketing to disguise feeble efforts and mislead consumers about what they're doing. As consumers become savvier and the downside of greenwashing becomes more apparent, more and more CMOs are discovering that it's better to approach environmental issues honestly and make genuine efforts to improve rather than to try to fool the public.

### 4) Entrepreneurialism Grows

The most successful organizations recognize the need to be highly agile and flexible. The problem is that simply decreeing a need to be innovative or assigning employees to address the task doesn't necessarily produce results. Consequently, some organizations are revamping conventional marketing practices and allowing small and ad-hoc teams to compete for new projects or initiatives that are on the leading edge of conventional and digital marketing.

### 5) Metrics Mature

The capacity to measure every click, tweet, and page visit is both a blessing and a curse. On one hand, there's a plethora of potentially valuable information that can revolutionize an organization. On the other side, it's tremendously simple for marketers and others to take their eyes off the ball and chase the incorrect KPIs.

### 6) People-Based Research Makes a Comeback

Marketers are attempting to manage the overwhelming amount of big data by actively pursuing deeper human insights. Previously, it was referred to as "ethnographic" research. Currently, it is referred to as "qualitative" research, which involves gathering individuals' opinions on products and services.

### 7) Increase the number of Maker Fairs and Meet-Ups.

As consumers become overwhelmed and start disconnecting and concealing their identities online, marketers will need to organize additional events and circumstances to provide them with a motive to engage with their brands in the physical world.

#### 8) Eliminate the Banners

While the desktop may not become obsolete, online video is expected to dominate over banner ads in 2014. The tablet has already gained recognition as the "second screen" in households, and more and more people are relying on mobile media as their primary source when they are away from home. As customers shift their activities to mobile devices, video content will also migrate to these platforms. In 2014, there will be a rise in mobile advertising expenditure. Brands and marketers will actively seek out and experiment with innovative mobile ad solutions, while the use of banner ads will decrease.

#### 9) Consumer expectations have increased.

Consumer expectations have experienced an average increase of 20% over the past 5 years. Brands have only managed to maintain a 5% growth rate, resulting in a significant disparity between customer expectations and actual performance. Accurately measuring unexpressed expectations will yield substantial benefits.

#### 10) Reduced number of monotonous messages.

Consumers who have a higher level of visual literacy will transition from using text-based communication to establishing connections that rely more on images. Visual content will play a crucial role in the development of viral marketing campaigns, as brands increasingly focus on image-sharing initiatives and platforms.

#### 11) Immediate satisfaction

Presenting a gift has consistently been a fundamental aspect of generosity marketing. The subsequent advancement entails conducting it through online platforms using digital gift cards. Consumers experience immediate delight, a quality highly appreciated by contemporary young audiences.

**Conclusion :**

Recognizing this, the market trend is now focused on expanding its reach to consumers beyond those previously obtained. Companies are increasingly focusing on individuals who are underprivileged and unable to afford their high-end products. These individuals are being targeted to attract customers. The marketer should strive to be inclusive. The marketer must consider a broader audience that exceeds the specific target audience he first identified. The marketer must engage with both prospective consumers and individuals who do not currently consume the product or service. Each brand must have two distinct avatars: one for potential buyers and one for non-buyers. Cost-effective and high-quality items, personalized modification to accommodate all budgets, and a range of price reductions and guarantees are being provided to attract these individuals to the market. The market is witnessing rising trends like as the provision of items on EMIs, offering 0% interest loans, introducing low-end models with limited features, and providing longer warranties. These strategies aim to attract and benefit from the huge population.

## ENVIRONMENTAL DEGRADATION

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### **Abstract**

*Environment is the place where all living beings live together. It is a place of surrounding of biotic and abiotic factors, which provide all resources for good human life like water, air and forest. Environment plays an important role in human life if provided with healthy and good environment leading to life span of population would be definitely more. Environment degradation is depletion of natural resources due to global warming, population growth, urbanization, rising of usage of energy. Problems arise in degradation like deforestation, pollution, over population and natural calamities. The citizen must start using eco-friendly products, minimize the wastage and must develop the habit of reuse, reduce and recycle. Environmental degradation reduces tourism as well. The primary research done addressing to the certain issue of degradation. It is responsibility of all of us to take care of the natural resource for our future generation making a sustainable future.*

**Keywords:** Natural Resources, Environment, Degradation

### **Introduction**

The natural resources are very precious, we all must acknowledge the value of natural resources before using and somehow wasting the natural resource it is our prime responsibility to prevent the natural resource for future consumption and for next generation. Huge population in India, results in excessive use and depletion of natural resources. High number of fertilizers used for meeting the demand of population which may turn into the loss of soil quality and irrigation work would not be possible. Rapid growth of industrialization may lead to degradation like water pollution, air pollution and land pollution. Environmental degradation may be naturally or



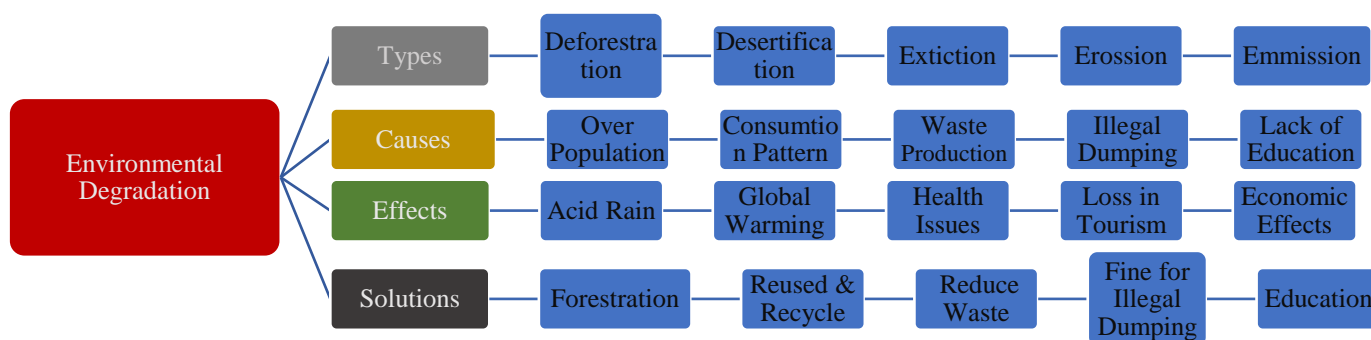
anthropogenic. The changed lifestyle of population leads to the environmental degradation. In earlier days all the customer used to carry cloth bags along with them, now the customer expecting that the shopkeeper must provide with shopping bags irrespective whether it is reuseable or not. Most of the house hold chores like washing clothes done with traditional way using tap water and manually now most of the houses used washing machine which result into environmental degradation as there is excessive usage of water and electricity as well.

### Objectives of study

- To discuss different types of environmental degradation.
- To study about causes of environmental degradation.
- To study various effect for environmental degradation.
- To discuss measures to control environmental degradation.

**Research Methodology:** Primary research being done to know the impact of environment and issues of environmental degradation. Secondary research also used like reference book & internet.

Point which would be discussed in this chapter are as follows:



### Types of Environmental degradation

**Deforestation:** India is being number one in population whereas some areas have high density of population. To meet the residential demand of population the deforestation taken place. Deforestation is converting forest land into agriculture land, commercial or residential land. The

deforestation has a great impact on the rain. The rainy seasons is highly effected due to deforestation resulting in loss of biodiversity. The forest provides raw material to wood industry and paper industry, which may not be available after deforestation. The forest is a habitat for many species and animal due to deforestation there is a huge decline in species and animals. It takes place due to rise in urban area land price.

**Desertification:** Desertification is a process where fertile land becomes desert, typically due to a combination of natural factors like climate change and human activities such as deforestation, overgrazing, and poor agricultural practices. This process leads to the degradation of land, making it less productive for farming and other uses. It can result in soil erosion, loss of biodiversity, and reduced water availability, impacting both the environment and the people who depend on the land for their livelihoods. Efforts to combat desertification often involve sustainable land management practices, reforestation, and water conservation measures to restore and protect the affected areas.

**Extinction:** Extinction occurs when a species ceases to exist, often due to environmental changes, habitat loss, or competition. It disrupts ecosystems, leading to cascading effects on biodiversity. Modern threats include climate change, pollution, and overexploitation, accelerating extinction rates beyond natural background levels, profoundly impacting ecological balance and evolutionary processes.

**Erosion:** Erosion is the process by which natural forces such as wind, water, and ice wear away and transport soil and rock from one location to another. This geological phenomenon can reshape landscapes, create sediment deposits, and significantly impact ecosystems. Erosion is driven by factors like climate, topography, and human activities.

**Emission:** Emission refers to the release of substances from a source into the environment. It primarily involves gases, such as carbon dioxide and methane, from industrial processes, vehicle exhausts, and natural events. These emissions contribute to atmospheric pollution, climate change, and health hazards, impacting ecological balance and human well-being.

### **Causes of Environmental Degradation**

**Overpopulation:** It would become impossible for providing natural resources for the population without disturbing the nature. The science and technology become so advance for the development

of human being, Therefore the population needs to be satisfied in compromising natural resources like deforestation and desertification.

**Consumption Pattern:** Consumption behaviour of natural resources changed drastically which may led to reduction and declining of natural resources, in earlier period the culture was use and reuse now the culture taken place like use and throw.

**Waste Production:** As the consumer behaviour changes the waste production increases as well. If we take the example of ink pen it was used and reused now the ink pen replaced by one time use pen. Earlier the consumer products are durable now product are not much durable like umbrella. The product which has expiry period and used in time span it also increase the waste. The changed life style and modernisation increase the waste production.

**Illegal Dumping:** The dumping ground fixed by Government authorities where most of the time the people prefer to dump from their own ways and this disposed and discard remain as it is without utilising for reuse and recycle. In illegal dumping the people usually do not segregate wet, solid and electronic wastage, here Government finds difficult for segregation and for reuse and recycle.

**Lack of Education:** The lack of education in environmental degradation is a significant issue that can exacerbate problems like desertification. When people are not aware of how their actions impact the environment, they may engage in practices that contribute to degradation without realizing the consequences. Education plays a crucial role in raising awareness about environmental issues, teaching sustainable practices, and promoting conservation efforts. By educating individuals and communities about the importance of preserving the environment and the consequences of activities like deforestation and overexploitation of resources, we can work towards more sustainable and responsible behaviour to combat environmental degradation.

### **Effects of Environmental Degradation**

**Acid rain:** The quality of water changes the pH level may not be good for human and living being consumption. Acid rain have adverse effect on harvest and on sea as well adversely effect on life of fishes and other animal. The acid rain would be harmful for birds as well. Gases, pollution and other particulate mixed in water at the time of rain and form an acid rain.

**Global Warming:** Burning of fossil fuel and deforestation is major cause of global warming. Temperature would high for longer period of time on planet for major cause of global warming.

Life style changes like maximum used of vehicles and air-conditioned increase temperature level and global warming. Maximum use of electronic items like laptop, mobile phone which continuously issue radiation increase global warming. Human consumption pattern increases global warming.

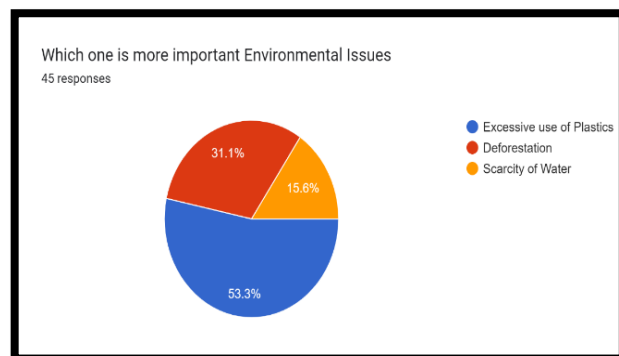
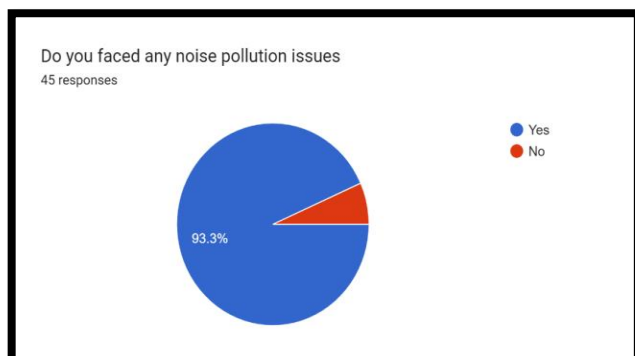
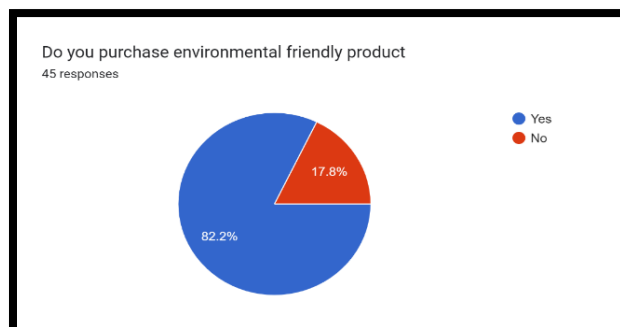
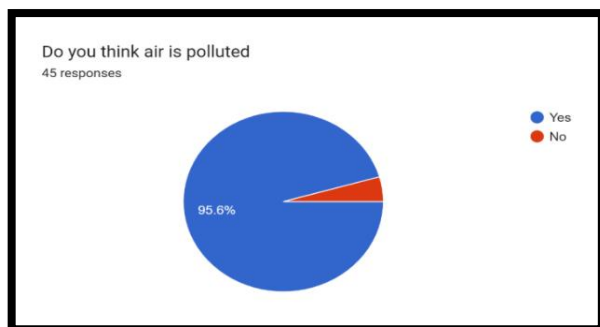
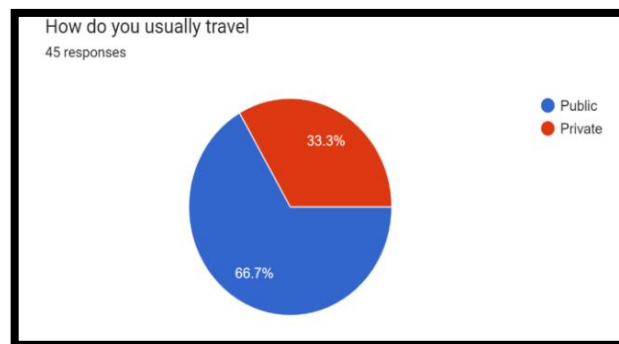
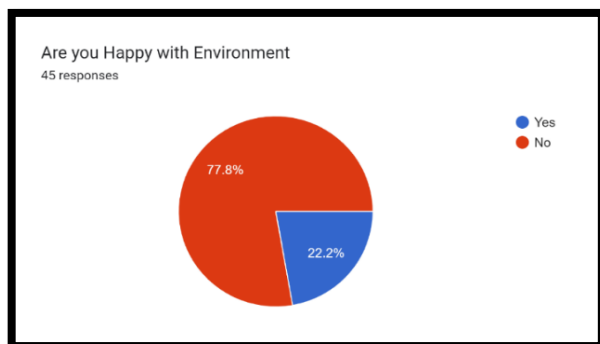
**Health Issue:** Polluted air and water increase diseases in human being. the maximum use of private vehicles, non-availability of fresh air and high level of carbon dioxide. The food grain fertilizes using high amount of pesticide decline the nutrition value of fruit and vegetable. The traffic issues are very common not only in metropolitan city but small city also. Morning sun light is good for health, due to deforestation, heavy sun light exposed to the population results into sunburn and skin cancer.

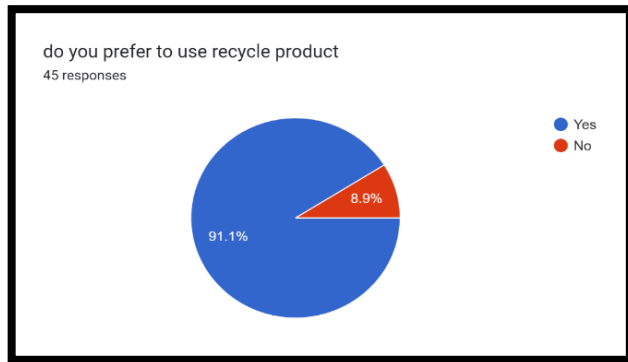
**Loss in Tourism:** Environmental degradation reduces the interest of any tourist; it is common interest of any tourist to be relaxed from normal routine if they visit any country which do not have clear climate and polluted, they don't prefer to visit. It will create loss in economy. To increase tourism country should provide world class facility to attract tourist. It's a vital source of income. inbound, outbound and domestic tourism all get effected.

**Economic effect:** The environmental degradation reduces the cultivation of good food grain, vegetable, fruits and other produce. The lesser the production, reduce the growth and economic. The economy also stops or slow due to heavy rain and flood effected area.

## Discussion

Here primary data was collected to understand the impact of environment degradation.





From the above data it has been identified that 77.8% respondents are not happy with the environment due to over pollution leading to severe degradation of environment. 33.3% respondents use private vehicle for travelling which can lead to adverse traffic congestion along with air pollution agreed by 95.6% respondents. 93.3% faced noise pollution issues showing its adverse effect on human health, animals and even on plants. 53.3% respondents agreed that excessive use of plastic is the major concern for environmental issues.

### **Solutions**

**Forestation:** To involve many people in tree plantation, drive and campaign would be help helpful as measure. The forest land may not be sold to any corporate. The growing forest would help in good environment. It helps to recover forest restructure. The forestation would be form as shelter to all wild animals.

**Reuse and Recycle:** The population must use recycle and reused product for next and repeat consumption. Instead of use and through the population must switch to reuse product like cloth shopping bags instead of plastic one. Reduce or minimize the use of plastic bottle one should carry own water while travelling the higher authority must take care for reuse, reduce and recycle instead of sending for land fill. Recycle is using old product to manufacture new product.

**Waste Reduction:** All people must go for traditional way of living in modernism the waste is more as compare to traditional life style. Using glass bottles, steel or aluminium plate instead of disposable plates and bottle. One must use phone and laptop when its necessary. Unnecessary use of phone and other electronic items reduces energy. If climate is good then to avoid use of Air Condition, walking distance place may avoid use of vehicles. At maximum try to use public transports instead of using private one.

**Fine for illegal Dumping:** The heavy fine to be imposed to the company or customers who usually do not bother about dumping. Once they pay fine, they will be careful for next time dumping land and not permissible for dumping. The residential some time they make as dumping ground

**Education:** If population are educated, they would be definitely taking care of environment and they would preserve for natural resource for future use and for next generation which is our utmost responsibility. It creates the discipline among the population like segregation of waste, minimum use of natural resources. It also effects in reduction of environmental degradation.

### **Conclusion**

The environmental degradation is very serious matter and important issue for discussion not merely discussion the decision must take place for perseverance of natural resources for future generation. The lifestyle must be changed. We must reduce the use of electricity consumption, reduce use of tissue papers, maximum use of vehicles and public transport. The company must dispose industry waste in proper ways instead of releasing in rivers. The sea and river area should have proper guard which may prevent them from pollution. Educating the mass for the protection of earth from different calamities. Each one of must proper dustbin must segregate waste into solid, wet and electronic. We the people with the help of higher authority may take an appropriate step to safeguard our environment.

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**A multidisciplinary approach to management, specifically in the context of  
education.**

Prof. Chetan More

Lectures

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**Abstract:**

A multidisciplinary approach to teacher education is offered, which enhances the quality and effectiveness of teacher preparation. It equips educators with the necessary knowledge and skills to thrive in modern and ever-changing educational settings, thereby benefiting both teachers and students. This is achieved by combining theory and practice. The field of teacher education is undergoing tremendous transformation due to the evolving demands of contemporary education. Traditional training programs for teachers sometimes fail to appropriately address the intricacy of the classroom in a continually evolving educational environment. A multidisciplinary approach aims to address this challenge by using theories and methodologies from other disciplines, including technology, psychology, sociology, education, and psychology. Consequently, this study briefly examines the importance and consequences of employing a multidisciplinary approach in teacher education.

**Introduction**

The economic progress of every nation is significantly impacted by education. India has placed a high priority on increasing the literacy rate in the country since it achieved independence. The Indian government persistently implements numerous efforts to bolster primary and higher education. Teacher education is a program aimed at elevating the standard of education in the country. Teacher education encompasses policies and processes that are specifically designed to provide teachers with the necessary information, attitudes, behaviors, and skills to effectively carry

out their responsibilities in the school and classroom setting. In order to be considered a teacher since the nineteenth century, an individual must possess specific attributes, including expertise in the subject matter to be taught, proficiency in teaching methodologies, and practical experience in applying both. In the past, instructors lacked specialized knowledge or formal training in any one field; they were typically intellectuals or religious leaders. It was commonly believed that teaching ability was an innate trait rather than something that could be developed through study. The most emphasized topics in modern teacher education programs are complemented by the undeniable significance of a person's inner character in their teaching ability. Experts hold differing opinions on whether this quality is innate or can be developed, as well as on the essential traits required for the teaching profession.

Teacher education encompasses policies and processes that are specifically designed to provide teachers with the necessary information, attitudes, behaviors, and skills to effectively carry out their responsibilities in the school and classroom. Historically, teachers were frequently scholars or clerics who lacked formal instruction in pedagogy for the areas they were knowledgeable in.

Previously, there was a common belief that teachers possessed innate qualities and could not be trained. However, the recognition of pedagogy as a legitimate field of study changed this perspective and emphasized the need for teacher training. While the question of whether teaching can be taught or if it is an innate talent has sparked ongoing debate, there has been a general consensus, particularly since the nineteenth century, that specific qualities are necessary to qualify someone as a teacher. These include a deep understanding of the subject matter, familiarity with effective teaching techniques, and practical experience in applying both. The majority of current educational programs for teachers prioritize these aspects. Nevertheless, the intrinsic nature of the individual is also a crucial element in the field of education. The question of whether these traits are innate or may be cultivated, as well as the specific attributes required for the position of a teacher, remain subjects of contention.

There is currently a requirement in teacher education for an approach that incorporates multiple disciplines. The Gurukul educational system of the country, which dates back to ancient times, exemplified multidisciplinary education at different periods (Selvamani, 2019). The students who have attended these institutions have accumulated a substantial amount of knowledge in several disciplines, such as physics, medicine, health, yoga, meditation, history, and virtually all areas of education. The guru imparts knowledge and expertise to the students, facilitating their

comprehensive growth. Consequently, the students acquire a well-rounded and interdisciplinary approach to education and learning. The primary objective of this technique is to cultivate expertise in a certain field, enabling students to effectively analyze material and apply it to practical situations.

#### Interdisciplinary Approaches: Indian Outlook

Multidisciplinary education is an educational approach that integrates several academic disciplines to provide a holistic learning environment. The Indian education system, along with other regions of the world, has long employed the practice of multidisciplinary and holistic education for learning. It provides an opportunity to blend many disciplines, transcend disciplinary boundaries, and explore alternate methods for addressing the same problem. The multidisciplinary approach entails utilizing knowledge and methods from various academic disciplines to redefine problems that go beyond conventional boundaries and find suitable solutions. This approach promotes collaboration across different fields of study, fosters the development of critical thinking skills in learners, and offers numerous opportunities for practical growth. The objective is to impart understanding of the interconnections between many disciplines and the methods to integrate them for more efficient problem-solving. Implementing interdisciplinary education in schools and institutions allows students to gain a deeper understanding of a subject by examining it from multiple disciplinary perspectives. Through multidisciplinary education, students are encouraged to engage in critical thinking, analyze other perspectives, collaborate in teams, and enhance their communication skills. This approach to learning enables students to enhance their comprehension of any subject while simultaneously cultivating their ability to integrate information from multiple areas. To enhance students' independence and adaptability in their academic pursuits, we may provide them with a broader range of educational opportunities.

A multidisciplinary approach entails utilizing knowledge and methodologies from various academic disciplines to redefine problems that go beyond conventional boundaries and to find suitable solutions. It promotes collaboration across different fields of study, fosters the development of critical thinking skills in learners, and provides numerous opportunities for practical growth.

It offers a chance to connect diverse fields of study and allows individuals to integrate several disciplines and approach the same topic from different perspectives.

The National Education Policy of 2020 emphasizes the adoption of a multidisciplinary approach.

India's educational system has made significant strides with the implementation of the National Education Policy 2020. This educational approach emphasizes holistic development by engaging with a diverse range of disciplines. This strategy is endorsed by the NEP 2020, which aims to enhance it in all aspects. The NEP incorporates multiple programs to provide a comprehensive approach to education.

- It encourages the pursuit of interdisciplinary education at different academic institutions. For this, it is imperative to have cooperation among educational institutions, universities, research organizations, and other groups.
- advocates for the integration of traditional Indian knowledge systems into modern curricula. This promotes learning by offering pupils a comprehensive perspective on several fields of study.

The NEP2020 advocates for the development of interdisciplinary programs and courses that cover a wide range of subjects, such as mathematics, science, the arts, technology, and the humanities.

A comprehensive and multidisciplinary education would strive to develop an individual's ethical, social, emotional, physical, and cognitive abilities in a unified way. The primary objective of NEP 2020 is to implement significant changes in secondary and higher education in India, with the aim of providing top-notch education to all and establishing India as a global leader in knowledge. The educational programs and teaching methods of institutions should cultivate a deep sense of duty and reverence towards one's constitutional duties, a strong commitment to the nation, and a deliberate comprehension of one's roles and obligations in a dynamic global environment (NEP, 2020). Arts and humanities students at engineering institutes like IITs will now actively seek to acquire scientific knowledge and incorporate vocational subjects and skills into their courses. This shift reflects a broader commitment to a comprehensive and interdisciplinary approach to education. As per NEP 2020, the duration of the undergraduate degree program will be either three or four years, including various exit alternatives and relevant certifications. As an illustration, when finishing a one-year program in a certain discipline or field that encompasses vocational and professional domains, students have the opportunity to obtain a certificate. Similarly, after two years of study, students can earn a diploma, and upon successfully completing a three-year program, they are eligible for a bachelor's degree. Nevertheless, the preferred option would be the 4-year interdisciplinary bachelor's program. Studies evaluating the integration of the humanities

and arts in undergraduate education consistently show favorable learning results. These include enhanced creativity, innovation, critical thinking, higher-order thinking abilities, problem-solving skills, teamwork, and communication proficiency. Additionally, students experience deeper learning and mastery of various subjects and heightened social and moral consciousness, among other benefits. An integrated and interdisciplinary approach to teaching strengthens and elevates research.

In India, teacher education programs primarily aim to train individuals for careers as educators across various levels of the education system. These programs offer education, expertise, and scholarly instruction to prospective teachers who are skilled in effectively teaching students. The National Council for Teacher Education (2009) states that teacher education programs encompass pedagogy, educational psychology, classroom management, subject-specific teaching strategies, and practical teaching experiences acquired through internships or in-person instruction. The program is designed to equip teachers with the requisite knowledge and abilities to become proficient educators. While the criteria and structure of teacher education programs in India may differ, they share certain similar elements, and their purpose stays consistent.

The Indian government formed the National Council for Teacher Education (NCTE) as a legal body to oversee and control teacher education. The NCTE sets rules and regulations for institutions and programs that educate teachers to ensure that the preparation they provide is of excellent quality.

A multidisciplinary curriculum as one that explores a subject by considering many disciplines and addressing difficulties from different disciplinary viewpoints. Teacher education is a topic that is still relatively new to the concept of using a multidisciplinary approach. Through the utilization of this cutting-edge pedagogical approach, the educators or teachers in this location possess the necessary maturity to effectively impart knowledge and skills. Teachers have ample opportunity to implement this innovative teaching technique, thereby actively involving students and enhancing their breadth of knowledge and experiences. Aspiring teachers or experienced educators may utilize illustrations from different disciplines to illustrate a lesson. Given its importance and relevance to the current stage of development, NEP2020 strongly recommends incorporating this strategy into our national framework. The objective of education is to augment students' cognitive faculties and develop their character, thereby cultivating individuals who are comprehensive and possess vital 21st-century competencies (NEP 2020). The NEP-2020

mandates the inclusion of teacher education in transdisciplinary colleges and universities by 2030, acknowledging the necessity of a more holistic educational system. Interdisciplinary higher education institutions will offer comprehensive education programs, including B.Ed., M.Ed., and Ph.D. degrees, by establishing dynamic and well-equipped education departments.

Old Indian universities like Nalanda, Takshashila, and other esteemed higher educational institutions saw a rise in the popularity of multidisciplinary teaching and learning approaches. Higher education that incorporates several disciplines revolutionizes knowledge by facilitating the interaction of different areas of expertise, ultimately contributing to the resolution of societal issues. The implementation of curricular modifications facilitated the integration of multiple disciplines in schooling. The choice-based credit system provides students with the opportunity to pursue specialized studies within their chosen areas, as well as the flexibility to study subjects from other disciplines.

As per NEP 2020, teacher education will play a crucial role in developing the teachers of the future generation. The process of teacher preparation entails acquiring a range of viewpoints and information, cultivating attitudes and values, and engaging in teaching practice under the leadership of highly competent mentors. Teachers must possess a comprehensive understanding of contemporary advancements in education and pedagogy, as well as a strong grounding in Indian values, languages, knowledge, ethics, and customs, with a specific emphasis on tribal traditions. Teacher education programs should be conducted at composite multidisciplinary institutions to ensure that they benefit from the expertise of several disciplines and provide training in both pedagogy and high-quality content. Through collaboration with various departments such as philosophy, psychology, sociology, neuroscience, Indian languages, music, art, literature, history, physical education, science, and mathematics, multidisciplinary universities and colleges aim to establish education departments that engage in advanced research on a wide range of educational topics. In addition, by 2030, all independent Teachers' Education Institutes must transform into interdisciplinary institutions in order to offer a 4-year integrated teacher training curriculum. The optimal choice would be the 4-year integrated stage-specific, subject-specific Bachelor of Education program provided by multidisciplinary universities.

## Summary

The Indian government has adopted the concept of interdisciplinary education as part of the new National Education Policy (NEP) 2020. This learning method aims to cultivate a comprehensive understanding of a subject by examining the interconnections and intersections across different disciplines. India's continued success in the global economy will rely on its dedication to a multidisciplinary approach to education, which is often considered the most effective method for addressing complex problems. India's adoption of the NEP 2020 puts it in a favorable position to enhance its existing educational framework and transition towards a multidisciplinary approach. Multidisciplinary approaches in teacher education have the potential to greatly empower teachers to effectively address the complex challenges of today's classrooms. The examination of multidisciplinary approaches in teacher education has provided a deeper understanding of their importance, potential benefits, and associated problems.

To summarize, employing multidisciplinary techniques in teacher education offers a practical solution to cultivate a fresh cohort of educators that possess creativity, cultural sensitivity, and readiness to thrive in a rapidly evolving educational environment. Collaboration among education institutions, policymakers, and teacher educators is crucial in order to allocate resources towards these initiatives. These strategies possess the potential to shape the trajectory of education and equip teachers with the necessary resources to inspire and transform the lives of their students.

**Innovative Eco-Materials: Plastic Roads and its Role in Environmental Sustainability**

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**ABSTRACT**

Plastic is a commonly used non-biodegradable material which is available everywhere and can be easily changed in any shape and cannot be separated from day to day life. However, now a day due to continuously and daily increasing plastic waste load on earth, plastic roads can be an innovative solution which contributes a sustainable alternative to conventional bituminous roads. By incorporating plastic waste into the conventional asphalt mix, plastic roads not only handle huge quantity of plastic waste but also enhance the performance and flexibility of road surfaces. Compared to traditional bituminous roads, plastic roads exhibit superior durability, with a higher resistance to wear and tear caused by heavy traffic and extreme weather conditions. This flexibility results lower maintenance costs and demonstrate a higher load-bearing capacity and better resistance to water-induced damage. Environmental sustainability can also boost up by recycling non-biodegradable plastics into valuable construction material. This recycling process reduces the large quantity of plastic waste ending up in landfills and oceans, contributing to a cleaner environment. Further, the plastic roads showed better performance under heavy load and better bitumen bonding resulting resistance to water-induced damage, such as depressions and rutting. However, the different types of plastic waste segregation and processing systems is a big challenge to ensure the quality and consistency of the plastic-bitumen mix. Despite these challenges, the advantages of plastic roads such as enhanced durability, cost savings, and environmental friendly nature make them more sustainable, with of reducing waste and improving road quality.

**Keywords:** Plastic Waste Recycling, Sustainable Environment, Plastic Roads, Flexible Pavement, Pavement Durability

**1.0 General**



The natural environment is an essential source for daily human activities, including food, water, and raw materials for shelter and industry. These resources are fundamental to sustaining human life and well-being and allow for long-term environmental quality. (Millennium Ecosystem Assessment, 2005).

### **1.1 Environmental Sustainability**

Environmental sustainability is a mutual relationship between living being and the natural environment which prevents the indiscriminate usage of natural resources and provides skillful usage of presently available natural resources so that it can be used today and tomorrow also. The International Institute for Sustainable Development (IISD) defines environmental sustainability as meeting the needs of the present without compromising the ability of future generations to meet their own needs, ensuring that natural systems can continue to provide the ecosystem services on which the economy and society depend (IISD, 2013). The United States Environmental Protection Agency (EPA) describes environmental sustainability as creating and maintaining conditions under which humans and nature can exist in productive harmony, fulfilling the social, economic, and other requirements of present and future generations (EPA, 2018).

### **1.2 Necessity and Scope of Eco-Friendly Materials**

The eco-friendly materials are those materials having minimum impact on environment. Eco-friendly denotes any product which comes from the green living and which is harmless to the environment and promotes to conserve the natural resources as well. Generally, these materials are nontoxic, biodegradable, and can conserve energy. They can not only minimize the environmental pollution load but also can boost up the health of ecosystem in nature (World Economic Forum, 2021).

There are several types well known commonly used eco-friendly materials are available in the market. Some commonly used materials are bamboo, recycled steel, reclaimed wood, and plastic waste, are being widely used for sustainable construction and environmental conservation. In developing countries like India, eco-friendly materials play a vital role in encouraging sustainable development. For example, now a days Bamboo is one of the fast-growing eco-friendly material, is extensively used in construction works. The furniture and other construction materials can be made by bamboo and used for a long time. Further, it can be recycled and helps to minimize the need of new raw materials and reduces waste disposal burden on environment. Reclaimed wood preserves forests and lowers landfill waste. Innovative materials like mycelium, a fungus-based product, are being employed for biodegradable packaging and insulation. Hempcrete, derived

from the hemp plant, offers excellent thermal properties and a low carbon footprint, making it a sustainable construction option. Bio-plastics, produced from renewable sources such as corn starch and sugarcane, provide a greener alternative to conventional plastics. Additionally, fly ash, a by-product of coal combustion, is used in concrete to enhance strength and durability while reducing waste.

Many researches have been done on sustainable materials. (Dr. R. Vasudevan, 2007) have significantly contributed to sustainable materials by developing plastic roads. In his research the plastics waste was utilised as a road construction material for flexible pavements. He highlighted the use of waste plastic in road construction and provided a practical solution to plastic waste management and improving road durability. (Sharma and Saini's, 2014) studied on waste plastic in bituminous mixes with its applications. Many researches have been made worldwide. (Rajasekaran et al., 2013), (Sultana and Gupta's, 2016) used the plastic waste as a road construction material and also discussed its performance and benefits in their research. (Sabina et al., 2009) mixed the polymer-modified bitumen with different percentages of plastics waste and found that the road performance can be improved under heavy load conditions. (Tapase and Shetkar, 2014) highlighted the role of plastic waste in road construction and improve the development of green infrastructure. (Sharma and Jain, 2015) worked on recent advancements in plastic roads and highlighted their practicality under heterogeneous traffic flow conditions. (Vasudevan et al., 2010) studied the use of plastic waste in road construction and analysed the effectiveness of mixing of plastic material with bitumen. Further, a comprehensive review was done by (Gawande et al., 2012) on plastic roads. He discussed the Indian efforts in this field.

### **1.3 Recycle and Reuse of Plastic Waste Materials**

With rapid growth and development of the modern society, single use plastic waste has increased, which directly influence the environment and pollution load in the nature. The annual production of plastic waste in India is shown in Table 1.

**Table 1: The Annual Production of Various Types of Waste Plastic Materials in India:**

S.No	Types of Plastic Waste	Waste Production (million tonnes)	Waste Origin Source
1.	Polyethylene Terephthalate (PET)	0.7	Beverage bottles and food containers
2.	High-Density Polyethylene (HDPE)	1.1	Containers and pipes
3.	Polyvinyl Chloride (PVC)	1.3	Pipes and medical devices
4.	Low-Density Polyethylene (LDPE)	0.9	Plastic bags and films
5.	High-Density Polyethylene (HDPE)	1.1	Detergent and shampoo bottles, Grocery bags
6.	Polyvinyl Chloride (PVC)	1.3	Pipes and fittings for plumbing
7.	Low-Density Polyethylene (LDPE)	0.9	Plastic bags (e.g., grocery, trash), Film wraps for food packaging
8.	Polypropylene (PP)	1.2	Automotive parts and packaging
9.	Polystyrene (PS)	0.6	Disposable cutlery and insulation materials

These figures highlighted the large volume of plastic waste generated annually, highlighting the need for effective recycling and reuse strategies.

Since, the disposal of plastic waste is fast growing active challenge for the entire world, all countries are actively promoting the recycling and reuse of waste plastics to mitigate this issue. The scope of recycling and reuse of waste plastics in India is very challenging, due to lack of awareness and dependency on single usage plastic.

Use of plastic waste in road construction works is one of the new innovative solutions, to reduce plastic pollution and enhancing sustainability.

## 2.0 Historical Overview of Plastic Roads

Plastic roads are made up by mixing of shredding and blending it with hot bitumen and aggregates. plastic waste in to the asphalt mixture. This methodology is basically focused on the plastic waste reduction and improve durability and increase the wear and tear resistance on pavement surface. In the world, the use of plastic waste in road construction was initiated in the 1990s and spread globally. Firstly, In Netherlands, the "Plastic Road" project initiated by the Dutch company Volker Wessels made entire modular, prefabricated road sections from recycled plastic. Similarly, at the same time, in the United Kingdom and Australia several researches had done with plastic roads. They highlighted the potential of plastic roads in both areas, plastic waste management and infrastructure challenges.

In India, the first significant use of plastic waste in roads was done by (Dr. R. Vasudevan, 2007) in 2002. Since then, India has widely adopted this technology with constructing thousands of kilometres of plastic roads, particularly in rural areas where the demand for durable and low-maintenance roads is high. Plastic roads represent a promising solution to the dual problems of plastic waste and road maintenance, combining environmental sustainability with practical benefits.

### **2.1 Applicability of Plastic Waste as Innovative Road Material in Indian Context**

In the Indian context, plastic roads offer several advantages over conventional bituminous roads, particularly in terms of durability, environmental impact, and cost-effectiveness. Since, the bitumen is the main binder material in flexible pavement material, and get attacked by water, conventional bitumen roads easily damaged under heavy traffic flow, bad weather conditions, and water logging conditions leading to regular maintenance and repairs, especially during monsoon seasons. On the other hand, plastic roads incorporate waste plastic into the bituminous mix showed higher durability and resistance to abrasion between tyre and pavement surface. This increased life span significantly reduces maintenance costs and the reduces the discomfort of drivers during road repairing works. As far as environment concerns, plastic roads suggest a sustainable solution to rapidly increased upcoming challenge of plastic waste disposal in the environment. By utilizing plastics waste in road construction works it helps to reduce the environmental hazards posed by plastic pollution, which is a significant issue in urban and rural areas alike (Vasudevan, 2017). Further, the plastic roads showed better performance and higher load bearing capacity under diverse climatic condition such as under heavy monsoons in Kerala to the extreme heat in Rajasthan (Bhardwaj, 2017). However, various challenges are also experienced for the implementation of plastic waste as a road material such as the need of segregation for efficient

plastic waste and processing systems, are presently in underdeveloped condition in many parts of India. In India, awareness regarding plastic waste segregation is very less. Therefore, all types of plastic waste come in mixed form which is very difficult to separate according to its original category. However, even with these challenges, the long-term benefits, including low maintenance and repairing works prone to cost savings and environmental sustainability and can be a superior alternative to traditional bituminous roads. Today, the adoption of plastic roads could transform road construction and maintenance in India and can uplift both infrastructural and environmental issues simultaneously. Since, the environmental pollution and disposal of pollutants are the biggest issues worldwide, sustainable development and waste management are the main goal to reduce the pollution load on earth. Therefore, in comparison of conventional bituminous roads, the advantages of plastic roads in terms of durability, cost, and environmental impact make them a feasible and beneficial alternative for the future infrastructure development (Ahmad & Nizamuddin, 2018).

### 3.0 Comparison Between Conventional Bitumen Road Vs Plastic Roads

S.No	Characteristic	Description	Reference
1.	<b>Durability</b>	Plastic roads are more durable and have a longer lifespan than conventional asphalt roads.	Vasudevan, R. (2017). Utilization of waste plastics for flexible pavement.
2.	<b>Cost-Effectiveness</b>	Construction and maintenance costs are lower due to the extended lifespan and reduced maintenance needs.	National Geographic (2018). How plastic roads are paving the way for the future.
3.	<b>Environmental Impact</b>	They help in reducing plastic waste by recycling it into road construction, thereby lowering landfill waste and pollution.	Jambeck, J. R. et al. (2015). Plastic waste inputs from land into the ocean.
4.	<b>Load Bearing Capacity</b>	Higher load-bearing capacity compared to traditional roads, making them suitable for heavy traffic.	Rinku Bhardwaj (2017). Application of Plastic Waste in Road Construction.
5.	<b>Resistance to Deformation</b>	Plastic roads are more resistant to deformation, such as potholes and	Indian Roads Congress (IRC) (2013). Guidelines for the use of

		rutting, especially in extreme weather conditions.	waste plastic in hot bituminous mixes.
6.	<b>Water Resistance</b>	Improved water resistance reduces the risk of potholes and other water-induced damages.	IS 2386 (1963). Methods of test for aggregates for concrete.
7.	<b>Temperature Tolerance</b>	Plastic roads can withstand a wider range of temperatures, preventing damage due to thermal expansion and contraction.	Vasudevan, R. (2006). Utilization of waste plastics in construction of flexible pavement.
8.	<b>Noise Reduction</b>	Potential to reduce noise levels due to the elastic nature of plastic, which can absorb sound.	Verma, S. S. (2008). Roads from plastic waste. The Indian Concrete Journal.
9.	<b>Resource Efficiency</b>	Utilizes waste materials efficiently, reducing the demand for traditional raw materials like bitumen.	Ahmad, J., & Nizamuddin, S. (2018). Use of Waste Plastic in Road Construction.

#### 4.0 Safety Issues and Challenges

In future perspective, plastic roads can be a better alternative to handle the non-biodegradable waste. However, in under developing countries like India one has to face lots of field challenges. Firstly, In Indian context, due to large population, there is no strict rules for plastic waste segregation at site before its disposal. It directly results in the collection of all types of waste in one bin and quite difficult to separate according to its thickness. This leads to the uneven distribution of plastic waste within the bituminous mix, potentially leading to inconsistent road performance under heavy traffic flow conditions. Due to deficiency of uniformity can cause certain sections to weaken faster, and required frequent targeted repairs (Shukla & Jain, 2017). The second major challenge is the extreme and adverse weather conditions such as the summer season, due to hot weather the temperature may rise up to the 50<sup>0</sup>C, which directly influence the plastic component present in the bitumen mix and tends to get soften and can cause rutting, fatigue cracking, surface bleeding and deformation under heavy loads. (Gawande et al., 2012). Equally, in colder climates, due to stiffness of bitumen there is a risk of brittleness, which can cause cracking (Raju et al., 2013). Additionally, while plastic roads are designed to be water-resistant, excessive rainfall and flooding during the monsoon season can test their flexibility. If the plastic-

bitumen mix is not adequately processed or applied, water penetration can still occur, leading to potholes and other forms of road damage (Chavan, 2013). Thus, although plastic roads offer significant benefits, these challenges are also very crucial issues to test the long-term performance under miscellaneous climatic and heterogeneous traffic flow conditions in India. (Khan & Gundaliya, 2012).

## **5.0 Conclusion**

Today, In the world, due to non-biodegradable nature of plastic, handling and disposal of plastic waste is a big challenge and is a serious threat for the environment as it directly disturbs the entire ecosystem. Sustainable Environment is the only solution in which the green living products can be used and recycled.

Presently, the plastic roads offer a good alternative over the traditional bituminous roads for handling and disposal of waste. By incorporating plastic waste into road construction works, helps to mitigate the issues of plastic pollution and promote environmental sustainability.

In India, the scope for plastic roads is vast due to the daily generation of high volume of plastic waste. Plastic roads showed better advantages over conventional bituminous roads, including improved durability, reduced maintenance costs, and improved resistance to extreme weather conditions. These benefits make plastic roads a capable alternative for miscellaneous climatic conditions and heavy traffic loads, In India. However, challenges such as the uneven distribution of plastic within the bituminous mix, trend of softening under hot weather condition, and brittleness in cold weather are also a very big problem. Furthermore, desired segregation and processing of plastic waste are important to ensure the constant quality of plastic roads. These challenges can be overcome through advancements in materials processing and construction techniques. Even with these hurdles, the long-term benefits of plastic roads, including environmental conservation and cost efficiency, make them a feasible and sustainable solution to meet future infrastructure demands.

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## **From suffering to thriving: Employee's wellbeing at workplace**

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United Nations Secretary-General António Guterres says, “Our world is becoming unhinged.” If this is to be believed to be true, then it can surely be closely associated with the imbalance that we can witness at the workplace in general across the globe. According to Gallup State of the Global Workplace: 2024 Report has mentioned that stress is causing a rapid increase in incivility at work. In the report further it has been mentioned that 41% of employees reported “a lot of stress.” According to the study the stress significantly varies depending on the functioning of the organization. As per the report more than 60% people are more likely to be stressed because of bad management practices. In the research it was highlighted that one out of 5 employees experienced loneliness a day prior to work. Hence they mentioned that in 2023 the global engagement festered and the holistic employee wellbeing also declined.

The above report and scenario enables us to view the importance of employee wellbeing at the workplace. There could be many reasons attributing to disengagement at the workplace and employee wellbeing. Poor job markets are directly correlated with active disengagement. In such situations effective labour laws can strengthen the current satisfaction and wellbeing of the employee. In India the labour legislation on Maternity Benefits, Sickness benefits and other Social Security laws help the organizations in maintaining and building a supportive atmosphere that enables decent employee wellbeing.

Worker well-being, in its broadest sense, encompasses the overall well-being of individuals engaged in work. It is important to distinguish worker well-being from related concepts to maintain clarity. Unlike employee well-being, which applies to individuals employed by

organizations, worker well-being includes all working people, such as volunteers, independent contractors, executives, and business owners. While many well-being constructs are relevant to both employees and non-employees, some are not universally applicable. For instance, volunteers may not relate to pay satisfaction, and independent contractors might not find co-worker or supervisor satisfaction relevant.

Employee well-being is also distinct from work-specific well-being, which includes constructs originating and applying strictly within the work context. An example is satisfaction with colleagues, which arises in the workplace but can influence other areas of life, like feeling good about work relationships at home.

Additionally, employee well-being differs from well-being at work, which pertains solely to the experience or state of well-being while at work. This well-being may be influenced by non-work-related factors, such as personal issues or enjoyable activities outside work.

Lastly, employee well-being is separate from general individual-level well-being, as it specifically concerns the lives and experiences of working individuals, unlike the broader concept of individual well-being.

India's robust economic growth, characterized by a GDP growth rate of approximately 7.2% in the fiscal year 2022-23, makes India one of the fastest-growing major economies globally. Despite the substantial disruptions caused by the COVID-19 pandemic, India's resilience is evident in its current recovery and projections of sustained growth. With a nominal GDP estimated at \$3.57 trillion in 2023, India stands as the world's fifth-largest economy.

The importance of maintaining employee wellbeing in such a thriving economic environment cannot be overstated. Healthy and motivated employees are contributory in driving productivity and efficiency, thereby contributing to higher business output. Effective wellbeing programs can lead to reduced absenteeism and lower turnover rates, resulting in significant cost savings for companies. In a competitive global market, a prosperous workforce is more likely to engage in innovative activities, fostering agility and adaptability essential for navigating economic changes.

Employee wellbeing also plays a crucial role in ensuring economic stability. As India continues its economic climb, promoting the wellbeing of its workforce can further contribute to social stability by reducing economic disparities. Improved employee wellbeing supports consumer

confidence and spending, which in turn drives further economic growth. The significant economic losses projected by the World Health Organization due to mental health conditions—amounting to \$1.03 trillion between 2012 and 2030—highlight the critical need for comprehensive wellbeing strategies.

Addressing the wellbeing of employees involves both mental and physical health initiatives. Surveys, such as the one by LinkedIn in 2021, indicate that around 55% of Indian professionals experience work-related stress. Also according to a survey by ADP Research Institute, about 76% of Indian workers speculate that stress has a negative impact on their work performance along with 49% expressing equivalent sentiments about their mental health. This study was published by the Economic Times in August, 2023. It is also published by Price water house Coopers in their research titled “Working Towards Wellness - an Indian perspective” that the number of people with hypertension is expected to see a quantum leap from an estimated 118.2 million in 2000 to 213.5 million in 2025. The rise in lifestyle- related diseases among working professionals underscores the necessity for physical health programs. Based on an analysis of organizational experience in designing & implementing employee wellness programmes across various countries requires a strategy that starts with gold standards for structuring and measuring success. There are four elements in this strategy: Leadership, Culture, People and Process These standards require a coordinated approach. Recognizing this, approximately 60% of large enterprises in India have implemented wellness initiatives. These efforts not only improve individual health outcomes but also enhance overall organizational performance.

Some major employers have established sophisticated wellness programs. For instance, Wipro offers various initiatives for its IT and BPO employees, including nutrition consulting, health centers (Arena), medical camps, employee well-being events, and the Mitra (Friend) initiative, which provides counseling services. Similarly, Infosys adopts a holistic approach to foster a positive environment through collaborative care and wellness management. This initiative aims to enhance employees' health standards, reduce absenteeism, and boost productivity.

Employers aiming to enhance wellness campaigns focus on several interrelated areas: education, involvement, behavior change, and sustainability. Education is crucial, as employees need to be taught how to live healthily and avoid behaviors that increase chronic disease risk, with lessons tailored to their environment and culture. Increasing employee involvement is also essential, with some programs seeing less than 10% participation while others achieve over 70% by offering

incentives, improving communication, and gaining support from both local and international management. However, enrollment alone does not change behavior; therefore, employers are exploring ways to encourage employees and their families to apply the lessons learned through incentives. For lasting impact, these behavioral changes must become ingrained in the company and community culture, necessitating coordinated efforts inside and outside the workplace. Leading companies implement top- down strategies to embed these changes, ensuring that wellness programs yield long-term results rather than short-term improvements.

Hence promoting employee well-being is essential for transitioning from a state of suffering to thriving in the workplace. By understanding and addressing the various aspects that contribute to their well-being, organizations can create environments where employees not only perform their duties but also flourish. This holistic approach to well-being ensures that all working individuals, regardless of their specific roles or employment status, can experience a fulfilling and balanced work life.

In conclusion, to sustain India's economic momentum, integrating holistic wellbeing strategies is essential. This includes mental, physical, and emotional health support systems, regular health check-ups, and access to fitness facilities. Promoting work-life balance through flexible working hours and remote work options, along with encouraging regular breaks and vacations, can prevent burnout. Investing in continuous learning and development programs keeps employees engaged and future-ready, while fostering an inclusive and positive work environment boosts morale. By prioritizing employee wellbeing, businesses in India can ensure a resilient and dynamic workforce, driving long-term growth and prosperity.

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## **The Green Finance**

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When we talk about "green finance," we are referring to financial products, tools, and investments that have been developed with the express purpose of assisting environmentally sustainable enterprises or activities. It comprises a variety of financial instruments that are designed to direct capital flows towards projects that have good impacts on the environment. These projects include renewable energy, energy efficiency, sustainable agriculture, green buildings, and climate adaptation programs. In order to address environmental concerns, promote sustainable development, and reduce the effects of climate change, the major objective of green finance is to mobilize both private and public resources. Specifically, it entails incorporating environmental concerns into the decision-making processes of financial institutions and supporting investments that contribute to an economy that is low in carbon emissions and environmentally efficient.

### **INSTRUMENTS FOR GREEN DEFINITIONS:**

1. Green bonds are financial instruments that are issued to finance or refinance projects that have positive effects on the environment. These projects may include renewable energy, energy efficiency, or sustainable infrastructure. Those investors who are looking to support activities that are ecologically beneficial are drawn to them.
2. Green loans are loans that are granted to finance environmentally friendly initiatives or activities that lead to improvements in the environment. One example of this might be financing for the installation of renewable energy systems, enhancements to energy efficiency, or sustainable agricultural management methods.
3. Sustainability-related Bonds and Loans: Financial instruments where the terms, including interest rates or principal repayments, are tied to the attainment of set sustainability performance criteria. The borrowers are provided with incentives to improve their performance in terms of sustainability.

Tradable certificates that indicate the reduction, avoidance, or elimination of greenhouse gas emissions from the environment are referred to as carbon credits and offset programs. It is possible to buy and sell these credits in order to compensate for emissions caused by other activities, which in turn encourages investment in programs that reduce emissions.

5. Green investment funds are investment entities that have been particularly developed to gather cash from investors and allocate those monies to projects that are environmentally friendly and sustainable. There is a possibility that these funds will concentrate on industries such as sustainable agriculture, clean technology, and renewable energy.

6. "Green Insurance Products" are insurance products that are specifically designed to cover risks that are associated with environmental difficulties. These risks may include damages caused by climate change, natural catastrophes, or liabilities because of environmental contamination. They work to encourage businesses to adopt methods that are more environmentally friendly.

7. Investment funds that take into account environmental, social, and governance (ESG) factors when making investment decisions are referred to as socially responsible investment (SRI) funds. Their objective is to generate financial returns while simultaneously supporting responsible corporate behavior and sustainable development.

8. Green mortgages are mortgage loans that are specifically meant to fund residences or buildings that are energy efficient for the environment. They frequently provide borrowers with favorable terms or incentives in order to encourage them to engage in environmentally friendly building modifications.

9. Green Certificates Tradable certificates that confirm the generation of renewable energy are known as green certificates. In addition to providing evidence that electricity was generated from renewable sources, they also provide financial support for projects that involve renewable energy.

10. Investment funds that are focused on financing green infrastructure projects, such as public transportation systems, water management facilities, or sustainable urban development initiatives, are referred to as green infrastructure funds.

11. Environmental, Social, and Governance (ESG) Bonds: bonds that are issued by corporations or governments with the revenues designated for projects that meet the requirements for ESG.

Among these projects may be initiatives pertaining to the preservation of the environment, the advancement of social development, or the enhancement of government.

12. Specific financial arrangements that are tailored for large-scale green projects, such as wind farms, solar power plants, or sustainable infrastructure developments, are referred to as "green project finance." The process of structuring loans according to predicted cash flows from the project itself is an essential part of project finance.

13. Green leases are lease agreements that include provisions for environmentally responsible or energy-efficient building measures. Standards for building performance, improvements in energy efficiency, and the utilization of renewable energy sources could be among the requirements that are included.

14. "Green venture capital" refers to investments made in early-stage businesses that are working to develop innovative technology or solutions that have major positive effects on the environment. Venture capital firms are primarily concerned with providing money to new businesses founded in fields such as waste management, sustainable agriculture, and clean energy.

15. Sovereign Green Bonds: A sovereign green bond is a sort of debt instrument that is issued by a national government in order to raise cash expressly for the purpose of supporting green projects and initiatives. In order to finance or refinance initiatives that have positive effects on the environment, such as the development of renewable energy sources, improvements in energy efficiency, sustainable infrastructure projects (such as public transportation or water management), or climate adaptation measures, sovereign green bonds are issued.

Concluding remarks:

The mobilization of money towards ecologically sustainable initiatives and the promotion of the transition to a low-carbon economy are both significantly aided by these instruments.



## LEADERSHIP ENRICHED CULTURE AND TACIT KNOWLEDGE

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### Abstract

**Purpose:** To identify the facilitators of leadership enriched culture for effective application of tacit knowledge to attain high firm performance.

**Methodology:** This paper moves towards an understanding of the overall facilitators of leadership enriched culture. The importance of leadership enriched culture, techniques of tacit knowledge is explored. Finally, a conceptual integrated model is proposed.

**Theoretical contributions:** Top Management support and a transformational and motivating leadership style has a significant impact on tacit knowledge sharing in organizations. It has tremendous value when made available to the right people at the right time.

**Implications:** This paper, addresses about an ideal organizational culture where the leader adopts the best HR practices, Infrastructure and Organizational climate for effective application of TK techniques which leads to sustained Organizational Performance.

**Keywords:** Leadership enriched culture, Tacit Knowledge, Organizational Performance

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### 1. Introduction

We are living in a knowledge economy (Bartlett and Ghosal, 1993; Davenport and Prusak 1995; Drucker, 1997; Nonaka, Toyama and Konno, 2001; Stewart 2001). The role of top management in KM is highly pivotal (Pillania, 2006) for sharing knowledge throughout the organization to leverage the competitive advantage. Knowledge which is new to an organization has to either be invented internally, or acquired from external sources (Spender, 1996).

There are two types of knowledge: explicit knowledge and tacit knowledge (TK). (Nonaka, 1994) and other authors such as Hall and Andriani (2002) describe explicit knowledge as what can be embodied in a code or a language and as a consequence it can be communicated, processed, transmitted and stored relatively easily. It can be shared in the form of data, scientific formulae, manuals and such like. In contrast, tacit knowledge is personal and hard to formalise – it is rooted in action, procedures, commitment, values and emotions (Ambrosini and Bowman, 2001). Tacit knowledge is not codified, it is not communicated in a ‘language’, and it is acquired by sharing experiences, by observation and imitation (Hall and Andriani 2002).

## 2. Leadership Enriched Culture

Corporate culture comprises the attitudes, experiences, beliefs and values of an organization (Burnes and Hakeem, 1995). It has been defined as "the specific collection of values and norms that are shared by people and groups in an organization and that control the way they interact with each other and with stakeholders outside the organization". Culture includes everything in the organization – telephone manners of the staff, employees reporting for work on time, socializing on the job, team work, reward system, pressure for innovation, prompt attention to customer complaints and a host of other things go in to making of an organization (Ouchi and Wilkins, 1985). The Primary Values of a Leadership Enriched Culture is to mentor others and create a conducive knowledge sharing and friendly work environment. To survive and succeed in exercising leadership, leaders must also work as closely with opponents as they do with supporters. The leadership pattern has a great influence on the organizational culture and it is the leader who frames the organizational culture. Some outstanding examples of culture building and culture influence on performance in India are TCS, Infosys, Wipro, HCL. The founders of these organizations were perfect leaders, who built the right kind of culture that comprises say,

- The Paradigm: What the organization is about; what it does; its mission; its values.
- Control Systems: The processes in place to monitor what is going on.
- Organizational Structures: Reporting lines, hierarchies, and the way that work flows through the business.
- Power Structures: Who makes the decisions, how widely spread is power, and on what is power based?
- Rituals and Routines: Management meetings, board reports and so on may become more habitual than necessary.
- Stories and Events: Convey a message about what is valued within the organization

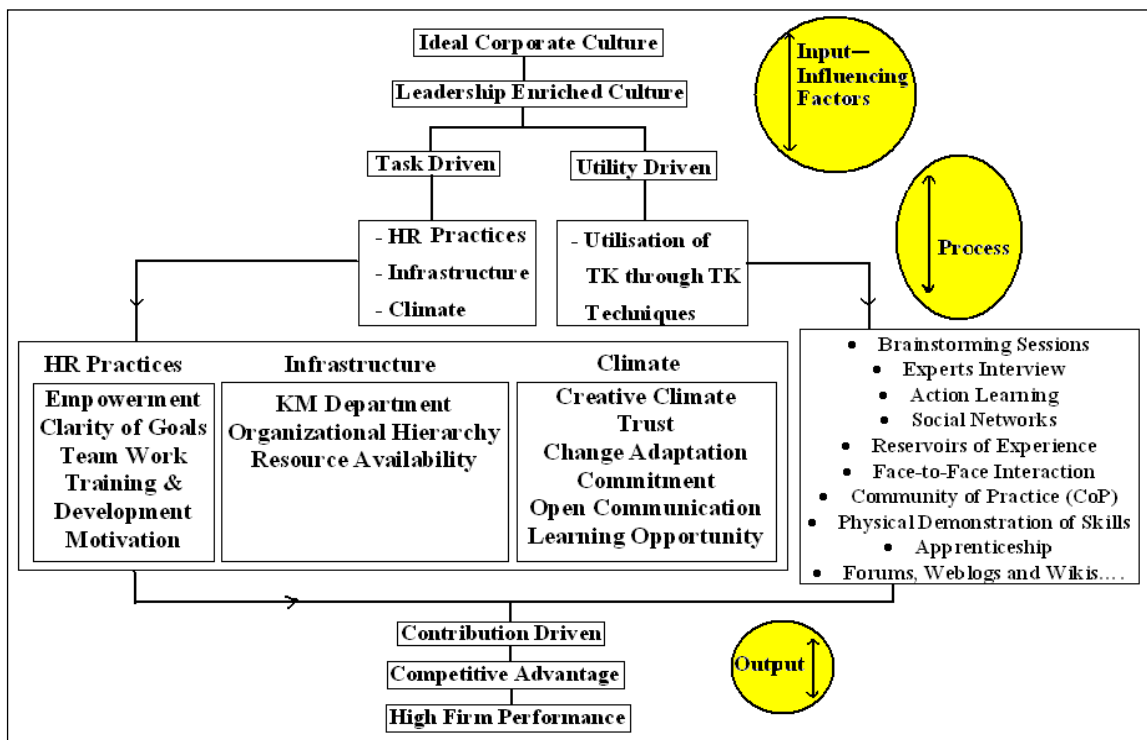
The characteristics of Leadership Enriched Culture are:

- Employees view the organization as an extension of themselves
- Cooperation is exceptional
- Individual goals are aligned with the goals of the organization
- Employees use group resources to actively solve problems
- Employees consistently bring out the best in each other
- Effective utilization of tacit knowledge by Leaders
- Leaders do not develop followers, but develop other leaders
- Leadership is contribution driven and not ego driven
- Provide learning opportunities
- Encourage team work and ensures Need based training to employees
- Very Low employee turnover

### 3. Leadership Enriched Culture, Tacit knowledge, Firm Performance - An Integrated Framework

Under Leadership Enriched Culture, the leader's vital elements should be (i) task driven (ii) utility driven which in turn leads to contribution driven (see Figure 2). The extent of effectiveness depends upon the extent of these factors—utilisation of TK techniques being the more dominant factor between the three. The leader could change from one style of leadership to another anywhere in that continuum, depending upon the need of the task / mission and the goals and sub-goals she/he has to achieve. The leader is effective because he is committed to the task and is clear about how to achieve it. The same leader may not be effective in another task if he does not know how to utilise the intellectual assets and their tacit knowledge. Thus, leadership is task and utility based, having relationship between best HR practices, infrastructure, organizational climate and effective utilisation of TK techniques.

Figure 1: Integrated Model



Source: Compiled by Authors

Tacit knowledge has tremendous value when made available to the right people at the right time (Augier et al., 2001). A precondition to activate tacit knowledge in the innovation process is to make sure that one is able to identify the relevant tacit knowledge which is a competitive advantage in the organization (Barney, 1991; Berman et al., 2002).

Tacit knowledge enables an increased perception of ideas. Therefore, it stimulates creativity and has a positive effect on business activities. The identification of tacit knowledge is often heavily hindered, but is made possible through the scope of personal contacts (Rüdiger and Vanini, 1998) where ideas are sharply critiqued but individuals are respected. Proper utilization of tacit knowledge leads to Innovative ideas. So, effective leadership should pave way for better HR practices, infrastructure and climate in an organization to capitalize the various techniques of tacit

knowledge. This would in turn help to attain competitive advantage and thereby result in high firm performance.

#### **4. Objectives of the Study**

The objectives of the study are:

1. To identify the influencing factors of high firm performance through leadership enriched culture facilitators
2. To identify the effective techniques in TK application

#### **5. Methodology**

This study aimed to examine the impact of leadership enriched culture through effective utilization of tacit knowledge techniques on firm performance. To better achieve the research aim, an extensive literature was reviewed. Based on the extensive review of literature in the field of KM, most of the attributes say, communities of practice (Brown and Duguid, 1991) social networks (Crossan et al., 1999; Kreiner, 2002; Lawson and Lorenz, 1999) brainstorming sessions (Castillo, 2002; Leonard and Sensiper, 1998) are coined and a model is framed by the researchers in this study.

Initially a focus group discussion with a five-member team representing one company is made. Based on the discussion the attributes are finalized. The study context is set in the IT industry. A questionnaire was designed to gather primary data. The questionnaire targeting project team members of IT sector was organized. The researchers target population mainly represented project team members from five IT & ITeS based companies located at Chennai, Tamil Nadu. The data collection is carried out in two stages. The first is initially a pilot study which was conducted from 40 respondents. The Cronbach Alpha Value came to 0.65. Later, 75 respondents were chosen as samples of the target population. A covering letter explaining the research process was also given to them. Convenience sampling technique was used.

Data are collected through an instrument developed using four broad dimensions such as leadership, HR practices, resources for learning opportunity and organisational climate. The choices offered used a 5-point Likert-type scale anchored by “1 – strongly disagree” to “5 – strongly agree” Close-ended Questionnaire

The statistical tools used are descriptive statistics and factor analysis. After scrutinizing the questionnaire based on the output of a pilot survey, the required information were collected in the second stage. The data are fed as input in an electronic SPSS spreadsheet and statistical analyses are conducted using SPSS software. Survey instrument has been checked for its validity and reliability. Further the responses are analyzed using factor analysis and ranking.

#### **5.1. Data Analysis and Interpretation**

##### **5.1.1. Reliability Analysis**

Alpha coefficient ranges from 0 to 1 and this can be used to describe the reliability of factors (see Table 1). The higher the score, the more reliable the generated scale is. The alpha coefficient values of the individual score of the items had no correlation with the total scores that is lower than the 0.35 cut-off value suggested by Saxe and Weitz (1982). All the item-to-total correlations for the expectations scale ranged from 0.6274 to 0.8597. Nunnally (1978) has indicated 0.60 to be an acceptable reliability coefficient. As it is, the procedure output has an overall alpha of 0.7391

which is good considering that .60 is the cut-off value for acceptability. The summary statistics of mean, range, variance, minimum and maximum values are also obtained.

**Table 1: Reliability Statistics**

Cronbach's Alpha	No. of Items
0.7391	36

### 5.1.2. Sampling Adequacy

A value closer to 1 indicates the patterns of correlations are relatively compact and so the factor analysis should yield distinct and reliable factors (see Table 2). Kaiser (1974) recommends acceptance if the measure of sampling adequacy is greater than 0.5. Then we proceed to factor analysis and the same procedure is followed. The degree of common variance among the seventeen variables is "middling" at 0.845, which states that sampling adequacy is acceptable.

**Table 2: KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.845
Bartlett's Test of Sphericity	Approx. Chi-Square	882.915
	Df	190
	Sig.	.000

### 5.1.3. Factor Analysis

Factor analysis attempts to identify underlying variables or factors that explain the pattern of correlations within a set of observed variables. Factor analysis is often used in data reduction to identify a small number of factors that explain most of the variance observed in a much larger number of manifest variables. Principal Component Analysis (PCA) is used here to carry out factor analysis; after the initial extraction of factors, varimax rotation is done to impose the restriction that the factors cannot be correlated. This technique is used to determine the number of factors that are to be extracted.

The communalities in the column labelled "Extraction" reflect the common variance in the data structure. The amount of variance in each variable that can be explained by the retained factors is represented by the communalities after extraction. The Rotation Sum of Squared Loadings of the Eigen values of the factors after rotations is displayed. Rotation has the effect of optimizing the factor structure and one consequence for the data is that the relative importance of the twenty attributes is equalized. 65.79% of total variance is explained after rotations of all the attributes and four components are extracted (see Table 3). The four factors identified are renamed as

- Effective Leadership
- Best HR practices
- Infrastructure for Learning
- Organization Climate

### Inference of Extracted Factors

It can be seen from the factor loadings, (see Table 4) that the attributes of leadership enriched culture for effective utilisation of tacit knowledge can be grouped into four sets.

- The first set of attributes concentrated on the role of a leader who do not teach rather share and lead, provide clear inputs, impart training, encourage team work, communicate and educate the employees before a change is made, motivates employees and demonstrate commitment to quality. Hence, these attributes are named under ‘Effective leadership’.
- The second set of attributes is regarding empowerment, respect to employees, clarity of goals, and coordination/teamwork in an organization. Hence, these attributes are named as, ‘Best HR practices.’
- The third set includes the various attributes pertaining to the resources available for learning opportunity. These are the attributes that help employees for career growth in an organization. These attributes are named under ‘Infrastructure for learning’
- Open communication and mental working condition are the fourth set of attributes. Hence, these attributes are named as ‘Organization Climate’.

**Table 3: Total Variance**

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.172	43.56	43.56	8.712	43.56	43.56	4.864	24.321	24.321
2	1.937	9.687	53.247	1.937	9.687	53.247	4.858	24.292	48.613
3	1.320	6.601	59.848	1.320	6.601	59.848	2.095	10.473	59.086
4	1.189	5.945	65.794	1.189	5.945	65.794	1.341	6.707	65.794
5	.904	4.519	70.313						
6	.809	4.045	74.358						
7	.752	3.760	78.118						
8	.622	3.112	81.230						
9	.518	2.592	83.821						
10	.503	2.517	86.339						
11	.491	2.456	88.795						
12	.427	2.135	90.931						
13	.407	2.036	92.967						
14	.349	1.745	94.712						
15	.265	1.326	96.038						
16	.252	1.259	97.297						

17	.182	.909	98.205						
18	.149	.747	98.952						
19	.111	.555	99.507						
20	.099	.493	100.000						

**Table 4: Rotated Factor Loading**

	Components			
	1	2	3	4
My leader do not teach but lead, share, encourage and stimulate me to grow develop and learn	0.797			
The leader provides active hands-on employee learning	0.779			
The leader ensures that employee have the training they require	0.7			
My leader encourages team work	0.683			
I have my leader who keeps me focused and motivated about my work	0.659			
My leader visibly demonstrate a commitment to quality	0.626			
The leader communicates and educates the employees before any change is made in the company	0.616			
My leader emphasis on fulfilling the needs of the employees	0.526			
Employees are treated with respect		0.759		
Employees have an active role in developing objectives and clear about goals to be achieved		0.724		
Employees are given power to take decision w.r.t their job		0.69		
I am very satisfied with the quality of training received for current position in the company		0.683		
I am satisfied with the spirit of team work within the company		0.676		
I do not get support and encouragement from my team-mates		-0.673		
On my job I have clearly defined quality goals		0.652		
Experienced employees in the company share information about best practices			0.786	
I have the tools and resources to do my job well			0.753	
There is "expert system" to capture and circulate special skills and knowledge			0.64	
Open communication is encouraged in my company				0.804
The mental working condition (social networks and interaction between people) is very good				0.622

## 5.2. Prioritization of TK Techniques through Ranking



It is inferred that most respondents indicated that action learning is the most influential technique of tacit knowledge for IT professionals who learn by doing from their projects (see Table 5). The other techniques of TK are brainstorming session, physical demonstration of skills, apprenticeship or learning by observation, community of practice (CoP), reservoirs of experience, social networks or informal interactions, forums, web logs, wikis, face-to-face interaction and experts interview or learning by being told.

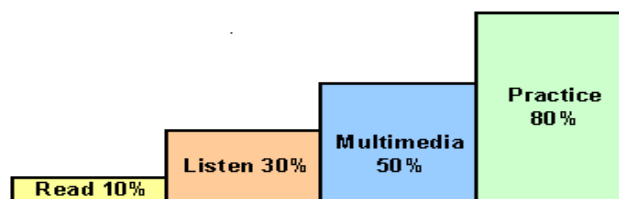
**Table 5: Prioritization of TK techniques through Ranking**

Techniques	Mean	Ranking
Brainstorming session	3.4	2
Apprenticeship	4.6	4
<b>Action Learning</b>	2.6	1
Community of Practice	5.4	5
Forums, Weblogs and Wikis	6.4	8
Face-to-Face Interaction	6.8	9
Social Networks	6.2	7
Experts Interview	9.6	10
Physical Demonstration of skills	4	3
Reservoirs of Experience	5.6	6

## 6. Discussion

An ideal corporate culture should pave way for Leadership enriched culture. A leadership enriched culture should have the best Human resource practices wherein employee empowerment, employee clarity of goals, team work, need based training to employees, motivation are predominant facilitators. The infrastructure of the organization should be in such a way where it helps for information sharing through chief information officers, knowledge managers. The KM department should have all the resources in terms of time, money and information. It would be better if the authority levels are not too many. Above all there should be management and employee commitment, trust-worthy environment, open-communication system and creative climate too. Thus, the environment that maximizes the contribution of TK should recognize, respect, reward employees and encourage open communication.

**Figure 2: Action Learning**



Tacit Knowledge enhances the firm's immunization system. Tacit knowledge can be activated by generating new scientific knowledge, (learning-to-learn), by incorporating new knowledge in the design of a new product, when learning new production methods and improving existing



technology through minor improvements based on Action learning or Learning-by-doing and based on learning by-using. Even Confucius has mentioned the importance of LBD by saying, “i hear and i forget; i see and i remember; i do and i understand”. Action learning or LBD is a learning process through ‘Practice’ (Figure 2) which is considered as an effective technique of TK.

The popular technique for capitalizing on the respective insights and intuitions (tacit knowledge) of a group of individuals is to conduct Brainstorming sessions. It paves ways to set directions and help everyone to understand the problem and clarify the objectives. It encourages cross-fertilization i.e. to combine, synergize and improve upon ideas. It also encourages outside-the-box thinking and active listening. It applies the 80/20 rule and thereby looks through the list of ideas and circles the 20% that will yield 80% of the results thereby leading to full-spectrum thinking.

Tacit knowledge exists randomly in society and relates to the context of a specific problem. Access is mainly through Social networks, or know-how. The tacit dimensions of individual knowledge are not publicly available except as embodied in people to be hired, and the tacit dimensions of collective knowledge are woven into the very fabric of an organization.

Tacit knowledge is gained throughout the Innovation and production chain of a company, and Howells (1996) adds further, that the stage at which tacit knowledge is gained and utilized in the innovation and production process is an important strategy and policy issue. Tacit knowledge is a source of competitive advantage. The creativity necessary for innovation derives not only from obvious and visible expertise, but from invisible Reservoirs of experience which need to get vitalized first, before using these in the innovation process.

Tacit knowledge can be gained both in and outside the organization. Inside the organisation, by deciding what existing tacit knowledge capabilities the members in the organisation carry themselves and what improvement could be made to build up the accumulated learning of the individuals and, therefore, enhance the tacit know-how competence.

Outside the organisation, by trying to gain tacit knowledge and skills from other firms, through recruiting the right individuals with the requisite education or work experience, or by acquiring parts of or whole new companies, or by engaging appropriate consultants or by building networks with other companies. It is made clear that tacit knowledge is gained and vitalised throughout all functions and stages of a company’s operations.

The key degree of tacit knowledge transfer is Face-to-face interaction, close relationships formed to have informal interaction and physical demonstration of skills. Most of the Asian companies focus on face-to-face collaborative knowledge sharing (Chase, 2002), use telephone, voice-mail, real-time video conferencing to transfer tacit knowledge.

As tacit knowledge is hard to communicate and express in words. So in order to disseminate it in an organization – common ground of communication between particular units, mutual trust, and analogical way of thinking is needed. “The contact zone” therefore is needed, where units can have a direct contact with one another.

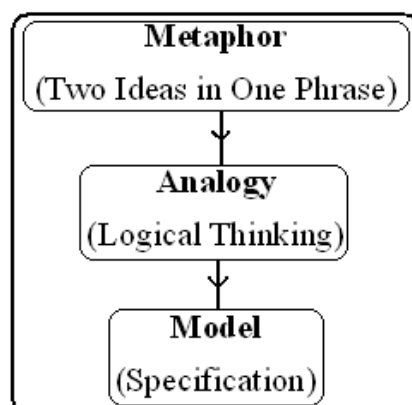
One of the few ways to make knowledge more accessible is to enable more conversations to take place in online environments such as forums, web clogs and wikis. In this way sharing is easier and more accessible than by more formalised processes and by making these conversations "linky" people can navigate them, point to the good stuff and build up a collective memory of what was useful.

## 7. Conclusion and Future Research

To conclude, this research has revealed conclusions that lend a hand in describing the importance of a leadership enriched culture that has best HR practices, infrastructure for learning, conducive organizational climate and the effective utilization of TK techniques to attain sustained organizational performance.

Tacit knowledge is knowledge housed in the human brain, such as expertise, skill, understanding, or professional insight formed as a result of experience. Though tacit knowledge is elusive, and difficult to tap as it is socially embedded in the individual, my views is that it can be shared through interaction and cooperation amongst individuals. For this to happen, trust, communication and interpersonal skills as well as mutual commitment are essential. Besides, a leader who encourages a socially cohesive environment is necessary for the learning process to take place. Thus, effective utilisation of tacit knowledge techniques in the presence of an efficient leader paves way for competitive advantage and thereby enhances firm's performance.

**Figure 3: Creation of Ideas**



The various other forms of creation of ideas are through Quick Think method, Meta-plan technique or card technique, Morphological analysis, Metaphor-figurative language, analogy, model. To convert tacit knowledge in to explicit knowledge means finding a way to express the inexpressible. The authors recommend additional research to further explore the role of TK towards sustained organizational performance.

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## **“Application of Quality by Design (QbD) in Analytical Method Development for Generic Formulations”**

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### **Introduction:**

Quality by Design (QbD) is a systematic and science-based approach to developing products and processes. When applied to analytical methods, it aims to ensure that the method is robust, reliable, and capable of meeting its intended purpose throughout its lifecycle.

### **Key Principles of QbD in Analytical Method Development**

1. Risk Assessment: Identifying and assessing potential risks that could impact the quality of the analytical method.
2. Design of Experiments (DoE): Using statistical techniques to design experiments that efficiently explore the relationship between method variables and the desired outcomes.
3. Control Space: Defining the range of conditions under which the method remains robust and reliable.
4. Continuous Improvement: Implementing a system for ongoing monitoring and improvement of the method.

### **Benefits of Applying QbD to Analytical Methods**

- Increased Robustness: Methods developed using QbD are more likely to be robust, meaning they are less sensitive to variations in experimental conditions.
- Enhanced Reliability: QbD helps to ensure that the method consistently produces accurate and reliable results.

- **Reduced Cost:** By optimizing the method development process, QbD can help to reduce costs and improve efficiency.
- **Improved Regulatory Compliance:** QbD can help to demonstrate regulatory compliance by providing a clear and scientifically justified rationale for method development and validation.

#### Steps Involved in QbD-Based Analytical Method Development

1. **Define the Analytical Target Profile (ATP):** Clearly specify the desired performance characteristics of the method.
2. **Identify Critical Method Variables (CMVs):** Determine the factors that are most likely to affect the method's performance.
3. **Design and Conduct Experiments:** Use DoE to design experiments that explore the relationship between CMVs and method performance.
4. **Develop a Control Space:** Define the range of conditions under which the method is expected to remain robust.
5. **Validate the Method:** Demonstrate that the method meets the specified performance criteria.
6. **Implement a Continuous Improvement Program:** Establish a system for monitoring and improving the method over time.

#### Examples of QbD Applications in Analytical Method Development

- **HPLC method development:** Using DoE to optimize mobile phase composition, flow rate, and column temperature.
- **Spectrophotometric method development:** Investigating the effects of pH, temperature, and matrix interference on absorbance.
- **Bioanalytical method development:** Assessing the impact of sample preparation techniques, matrix effects, and assay sensitivity on method performance.

By applying QbD principles to analytical method development, organizations can improve the quality, efficiency, and reliability of their analytical processes.

#### Optimizing HPLC Methods Using Design of Experiments (DoE)

Design of Experiments (DoE) is a powerful statistical tool used to efficiently explore the relationship between method variables and the desired response. In HPLC method development, DoE can be employed to optimize factors such as mobile phase composition, flow rate, and column temperature.

#### Key Steps in Applying DoE to HPLC Method Development

1. Define the Response Variable: Clearly identify the desired outcome, such as peak resolution, retention time, or sensitivity.
2. Select the Critical Method Variables: Determine the factors that are most likely to affect the response variable. In HPLC, these might include:
  - o Mobile phase composition: The ratio of organic solvent to aqueous buffer.
  - o Flow rate: The rate at which the mobile phase is pumped through the column.
  - o Column temperature: The temperature of the column.
3. Design the Experiment: Choose an appropriate DoE design based on the number of variables and desired level of precision. Common designs include:
  - o Factorial designs: Explore all possible combinations of the selected variables.
  - o Fractional factorial designs: Evaluate a subset of all possible combinations to reduce the number of experiments.
  - o Response surface methodology (RSM): Use a series of experiments to model the relationship between the variables and the response.
4. Conduct the Experiments: Perform the experiments according to the designed plan, carefully controlling the variables.
5. Analyze the Data: Use statistical tools to analyze the data and identify the optimal conditions for the desired response.
6. Validate the Optimized Method: Conduct additional experiments to confirm the validity of the optimized conditions.

Example: Optimizing HPLC Method for Separation of Compounds A and B

Response variable: Peak resolution between Compounds A and B  
Critical method variables: Mobile phase composition (acetonitrile-water ratio), flow rate, column temperature

DoE design: A central composite design (CCD) with three factors at two levels each.

Analysis: Using statistical software, analyze the data to determine the optimal combination of acetonitrile-water ratio, flow rate, and column temperature that maximizes peak resolution.

Validation: Conduct additional experiments under the optimized conditions to confirm the desired peak resolution and other performance criteria.

Benefits of Using DoE for HPLC Method Development

- Efficient optimization: DoE allows for the exploration of multiple variables simultaneously, minimizing the number of experiments required.
- Improved understanding: DoE can help to understand the interactions between method variables and their impact on the response.
- Enhanced robustness: Methods developed using DoE are often more robust, meaning they are less sensitive to variations in experimental conditions.
- Improved regulatory compliance: DoE can provide a strong scientific basis for method development and validation, which is important for regulatory compliance.

By effectively applying DoE to HPLC method development, scientists can optimize their methods for improved performance, efficiency, and reliability.

#### Optimizing Spectrophotometric Methods Using QbD

Spectrophotometric methods are widely used in analytical chemistry to quantify the concentration of analytes based on their ability to absorb light at specific wavelengths. To ensure the accuracy and reliability of these methods, it is essential to investigate the effects of various factors, such as pH, temperature, and matrix interference, on the absorbance of the analyte.

##### The Impact of pH on Absorbance

- Protonation/deprotonation: The pH of the solution can influence the protonation or deprotonation of the analyte, which can alter its absorbance properties.
- Shift in maximum absorbance wavelength: Changes in pH can cause a shift in the wavelength at which the analyte absorbs maximum light.
- Optimization: It is crucial to identify the optimal pH range for the analyte to ensure accurate and reproducible measurements.

##### The Impact of Temperature on Absorbance

- Beer-Lambert law deviation: At higher temperatures, the Beer-Lambert law may deviate from linearity, affecting the accuracy of concentration measurements.
- Thermal degradation: Some analytes may degrade at elevated temperatures, leading to decreased absorbance or changes in spectral properties.
- Optimization: It is necessary to determine the optimal temperature range for the analyte to maintain the integrity of the sample and ensure accurate measurements.

##### The Impact of Matrix Interference on Absorbance



- Competing absorption: Other components in the sample matrix may absorb light at the same wavelength as the analyte, interfering with the measurement.
- Scattering: Particulate matter in the sample can scatter light, reducing the amount of light that reaches the detector.
- Matrix effects: The presence of other substances in the sample can alter the analyte's absorbance properties or interfere with the analytical process.
- Sample preparation: Proper sample preparation techniques, such as dilution, filtration, or extraction, can help to minimize matrix interference.

#### QbD Approach to Optimize Spectrophotometric Methods

1. Define the Analytical Target Profile (ATP): Clearly specify the desired performance characteristics of the method, including accuracy, precision, sensitivity, and selectivity.
2. Identify Critical Method Variables (CMVs): Determine the factors that are most likely to affect the method's performance, such as pH, temperature, and matrix interference.
3. Design and Conduct Experiments: Use Design of Experiments (DoE) to design experiments that explore the relationship between CMVs and the response variable (absorbance).
4. Develop a Control Space: Define the range of conditions under which the method is expected to remain robust and reliable.
5. Validate the Method: Demonstrate that the method meets the specified performance criteria.
6. Implement a Continuous Improvement Program: Establish a system for monitoring and improving the method over time.

By applying a QbD approach to spectrophotometric method development, scientists can optimize their methods for improved accuracy, precision, and robustness, ensuring reliable and reproducible results.

#### Bioanalytical Method Development: A QbD Approach

Bioanalytical methods are essential for the analysis of biological samples, such as blood, plasma, and urine, to quantify the concentration of drugs or biomarkers. To ensure the accuracy and reliability of these methods, it is crucial to assess the impact of various factors, including sample preparation techniques, matrix effects, and assay sensitivity.

#### Sample Preparation Techniques

Sample preparation is a critical step in bioanalytical method development. It involves isolating the analyte of interest from the complex biological matrix. Common techniques include:

- Liquid-liquid extraction (LLE): Separating the analyte into an organic solvent based on its solubility.
- Solid-phase extraction (SPE): Using a solid sorbent to selectively adsorb and elute the analyte.
- Protein precipitation: Denaturing and precipitating proteins to remove them from the sample.
- Ultrafiltration: Using a membrane to separate the analyte based on its size.

The choice of sample preparation technique depends on the properties of the analyte and the biological matrix. Factors to consider include:

- Analyte stability: Ensuring that the analyte remains stable during the preparation process.
- Matrix effects: Minimizing the interference of other components in the sample.
- Recovery: Achieving high recovery of the analyte from the sample.
- Efficiency: Optimizing the sample preparation process for time and cost-effectiveness.

#### Matrix Effects

Matrix effects occur when components in the biological matrix interfere with the analysis of the analyte. These effects can lead to inaccurate measurements and reduced assay sensitivity. Factors contributing to matrix effects include:

- Ion suppression: When matrix components compete with the analyte for ionization in mass spectrometry-based assays.
- Ion enhancement: When matrix components enhance the ionization of the analyte.
- Co-elution: When other components in the sample co-elute with the analyte, interfering with its detection.

To minimize matrix effects, it is essential to:

- Use appropriate internal standards: Compounds that are structurally similar to the analyte but do not interfere with the assay.
- Optimize sample preparation techniques: Select methods that effectively remove or dilute interfering components.
- Consider matrix matching: Prepare calibration standards and quality control samples in a matrix that is similar to the biological samples.

#### Assay Sensitivity

Assay sensitivity refers to the ability of the method to detect and quantify low concentrations of the analyte. Factors affecting assay sensitivity include:

- Limit of detection (LOD): The lowest concentration of the analyte that can be reliably detected.
- Limit of quantification (LOQ): The lowest concentration of the analyte that can be reliably quantified with acceptable accuracy and precision.
- Assay signal-to-noise ratio: The ratio of the analyte signal to the background noise.

To improve assay sensitivity, it is important to:

- Optimize assay conditions: Adjust factors such as incubation time, temperature, and reagent concentrations.
- Use sensitive detection methods: Employ techniques such as mass spectrometry or immunoassays with high sensitivity.
- Minimize matrix effects: As discussed above, reducing matrix interference can enhance assay sensitivity.

#### QbD Approach to Bioanalytical Method Development

A QbD approach can be applied to bioanalytical method development to ensure the robustness, reliability, and regulatory compliance of the method. Key steps include:

1. Define the Analytical Target Profile (ATP): Specify the desired performance characteristics of the method, such as sensitivity, accuracy, precision, and specificity.
2. Identify Critical Method Variables (CMVs): Determine the factors that are most likely to affect the method's performance, such as sample preparation techniques, matrix effects, and assay sensitivity.
3. Design and Conduct Experiments: Use Design of Experiments (DoE) to explore the relationship between CMVs and the response variable (analyte concentration).
4. Develop a Control Space: Define the range of conditions under which the method is expected to remain robust and reliable.
5. Validate the Method: Demonstrate that the method meets the specified performance criteria.
6. Implement a Continuous Improvement Program: Establish a system for monitoring and improving the method over time.

By applying a QbD approach to bioanalytical method development, scientists can optimize their methods for improved performance, accuracy, and reliability, ensuring that they meet the stringent requirements of regulatory agencies.

## Composite Culture during the Reign of Akbar: An Analytical Study

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### Abstract

The reign of Akbar (1556-1605), India's third Mughal emperor, is widely regarded as a golden era in Indian history due to significant cultural, religious, and political amalgamations. Akbar's policies and acts, which were based on tolerance and diversity, fostered a composite culture that made a lasting impression on the subcontinent. This article investigates the nature of this composite culture under Akbar's reign, focusing on its manifestations in religious policies, architecture, literature, and social institutions. It contends that Akbar's policies, particularly his approach to religious tolerance and syncretism, created the groundwork for a Mughal-Indian cultural synthesis that is still relevant today.

**Key Words:** Cultural amalgamation, Tolerance and diversity, Composite culture, Architecture, Literature

### .Introduction

The Mughal era in India, particularly the reign of Emperor Akbar (1556–1605), is widely regarded as a period of rapid cultural advancement. Akbar, who ascended to the throne at an early age, demonstrated remarkable military skill and remarkable foresight in shaping India's religious and cultural landscape. . His reign is characterized by a unique approach to governance that fostered unity among diverse religious and ethnic groups Akbar's concept of *Sulh-i-Kul* (universal tolerance), his patronage of arts and literature, and his innovative administrative reforms were pivotal in the creation of what scholars' term "composite culture."

The term “composite culture” refers to the synthesis of various cultural, religious, and social traditions that coexisted and affected one another, resulting in a common and enhanced cultural framework. Under Akbar, this concept was expressed in a variety of disciplines, including religion, architecture, and social policy, making his reign a watershed event in the Indian subcontinent's cultural history.

### **Religious Tolerance and the Policy of *Sulh-i-Kul*:**

A significant aspect of Akbar's reign was his policy of *Sulh-i-Kul*, meaning "peace for all." This thought reflected Akbar's belief in the intrinsic unity of all religions. Akbar, unlike his predecessors, did not highlight his religion's superiority over other faiths. Instead, he actively promoted religious tolerance, acknowledging the diversity of beliefs in his empire, which included Hindus, Jains, Christians, Zoroastrians, and Buddhists, among others.

In 1575, Akbar founded the *Ibadat Khana* (House of Worship) in Fatehpur Sikri, where academics and theologians from many religions met for inter-religious dialogues. Initially designated for Muslims, the *Ibadat Khana* was soon opened to academics of other faiths, demonstrating Akbar's desire to promote interfaith conversation and understanding. This inclusiveness was shown by Akbar's founding of the *Din-i-Ilahi* (Religion of God), an eclectic faith that incorporated aspects from numerous religious traditions. While the *Din-i-Ilahi* did not receive broad support, it represented Akbar's devotion to transcending religious borders.

Akbar's administrative changes reflected his ideas of religious tolerance. In 1564, he abolished the *jizya* (a non-Muslim tax) as well as the pilgrimage fee, demonstrating his readiness to relieve his non-Muslim subjects' financial burden. Furthermore, Akbar appointed Hindus to high-ranking positions, such as Raja Todar Mal, who overhauled the empire's revenue system, and Raja Man Singh, a trusted officer in the Mughal army. These initiatives indicated Akbar's devotion to integrating other communities into the Mughal administration, establishing a sense of political and cultural unity.

### **Art, Architecture, and Cultural Synthesis**

Akbar's court was a hub of artistic and architectural innovation, where Persian, Indian, and Central Asian influences merged to create a distinctly Mughal aesthetic. His patronage of the arts was instrumental in the development of a composite cultural tradition that was visually manifested in architecture, painting, and literature.

The architectural legacy of Akbar's rule is especially noteworthy. Akbar's constructions including the Fatehpur Sikri complex, Humayun's Tomb, and Agra Fort, represent a blend of Persian, Central Asian, and indigenous Indian architectural styles. The use of red sandstone, domes, arches, and intricate carvings all reflect this synthesis. The Buland Darwaza (Gate of Magnificence) at

Fatehpur Sikri stands as a monumental symbol of Akbar's sovereignty, but it also incorporates aspects derived from Hindu and Islamic traditions, representing the cultural fusion of the time.

Akbar's patronage extended to the arts, including painting. The “Mughal school of miniature painting” flourished during his rule, fusing Persian artistic techniques with Indian themes and symbols. Under the guidance of Akbar's court painters *Abd al-Samad* and *Mir Sayyid Ali*, Indian artists began to incorporate indigenous colors and designs into otherwise Persian-inspired styles. During this period, illustrated manuscripts like as the *Hamzanama* and the *Akbarnama* were created, depicting historical narratives in a style that was both Persian and Indian in its essence.

### **Literature and Intellectual Flourishing**

Akbar's reign was also a period of literary and intellectual flourishing. The Mughal court was home to poets, historians, and scholars from across the empire and beyond, many of whom contributed to the creation of a rich body of literature. Persian remained the language of administration and high culture, but Akbar encouraged the translation of important Sanskrit works into Persian, facilitating cross-cultural literary exchange. Notable among these translations was the *Mahabharata*, translated into Persian as the *Razmnama*. Akbar also commissioned scholars to translate the *Ramayana* and various other Sanskrit texts, furthering the cultural dialogue between Persianate and Indian traditions. These translations were significant not only in fostering mutual respect among different religious communities but also in shaping the literary traditions of both Hindus and Muslims during and after Akbar's reign.

The promotion of vernacular languages was another important aspect of Akbar's cultural policies. While Persian dominated the court, Akbar encouraged the use of local languages like Hindi, Bengali, and Punjabi in literature and administration. This emphasis on linguistic diversity helped preserve regional literary traditions while also contributing to the development of new, hybrid literary forms that reflected the empire's cultural pluralism.

### **Social and Political Impact of Composite Culture**

Akbar's promotion of composite culture had a significant impact on the Mughal Empire's social and political systems. His efforts to integrate different cultures inside the empire included the formation of a more inclusive ruling class, in which Muslims and Hindus worked together in the imperial bureaucracy. This inclusion helped to stabilize the empire by fostering loyalty in both Muslim and non-Muslim subjects.

Akbar's marriage alliances also played a crucial role in fostering cultural synthesis. His marriage to *Jodha Bai*, a Rajput princess, is often cited as a symbol of his efforts to integrate Hindus into the Mughal ruling class. Such alliances were not merely symbolic but were part of a broader strategy to secure the loyalty of Rajput rulers and incorporate them into the Mughal administrative structure.

As a result, Akbar's empire's social fabric was distinguished by a level of religious and cultural diversity that had been uncommon in previous periods. Akbar's policies encouraged social mobility, especially for non-Muslims, who were given positions of authority and influence in the Mughal court. This cultural synthesis was reflected in the day-to-day interactions of people across religious and ethnic divisions, contributing to a sense of common identity that transcended sectarianism.

### **Conclusion**

Akbar's reign marks a watershed event in Indian cultural history, with a deliberate endeavor to build a composite culture. Akbar's religious tolerance, as exemplified by his *Sulh-i-Kul* policy, his sponsorship of the arts and literature, and his advocacy for inclusive governance, created the groundwork for a Mughal-Indian cultural synthesis that cut across religious and ethnic lines. The composite culture that formed during Akbar's reign not only strengthened the Mughal Empire's stability, but also left an enduring influence on the cultural and social landscape of the Indian subcontinent.

Akbar's vision of a united, diversified, and tolerant empire continues to inspire scholars and leaders today, reminding us of the importance of tolerance and cultural interaction in the face of diversity.

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*Exploring the consumer narrative by analyzing psychological influences in the age of social media marketing – An analytical cum descriptive study*

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**Abstract**

The impact of online entertainment is increasingly significant in the dynamic Digital India sector. This study investigates the impact of online entertainment advertising on consumer behavior, focusing specifically on Lidl and IKEA within the Finnish retail sector. The research presents several perspectives through content analysis and interviews with six store managers. An extensive examination of the participants' demographics revealed a heterogeneous assembly of leaders possessing varying degrees of experience across age, education, and professional domains. The findings indicate that advertising for online entertainment items significantly influences consumer preferences and choices. Notwithstanding predominantly favorable reviews, certain consumers may encounter difficulties in monitoring specifics. This study elucidates the intricate relationship between virtual entertainment marketing and customer behavior, offering essential insights for firms adapting to the global digital transformation.

Keywords: Social Media Marketing, consumer behavior, influence, LinkedIn, Facebook

**Introduction:**

Virtual entertainment plays a crucial role in informing and entertaining clients in Digital India. Robust research indicates that advertising in digital entertainment can enhance brand recognition, influence consumer choices, and garner public support. It may also produce innovative concepts,

enhance brand traffic, furnish comprehensive information, establish a consumer base, and nurture existing relationships. These factors can bolster consumer loyalty and improve the brand's public image. Concerning Digital India. It is noteworthy that minimal research has been conducted in this domain, considering the significance of trust and perceived market advantages in customers' online entertainment purchasing decisions. Both elements influence consumer perceptions of internet purchase. Consequently, there are challenges in understanding the relationship between online virtual entertainment companies and consumer purchase behavior in Digital India, stemming from insufficient evidence about the role of trust and perceived market advantages in this context.

The proliferation of globalization and the distribution of knowledge facilitated by the Internet have catalyzed company growth. Clients possess a broader range of services and products, which has incited intense antagonism. Although some organizations are ready to utilize online entertainment advertising for brand promotion, few have adequately qualified their managers to comprehend the medium. The capacity to generate positive customer interest in the company's products or services relies on business executives' proficiency in creating compelling online content.

### **Progression of social media marketing**

The emergence of digital media for entertainment Between 1995 and 2002, the Internet bubble catalyzed the development of a new sector: online advertising. The rapid ascent of the internet has become it an effective instrument for advertising. Foster sites were among the initial instruments employed by organizations to create a web presence and enhance their reputation. Organizations can now utilize web crawler enhancements (web optimization) due to the emergence of web indices such as Google, Hurray, and MSN. Businesses can now enhance their exposure in search engine results through the utilization of web crawler enhancers.

The expansion of content marketing has been facilitated by newly published articles on the site's second generation. Inbound marketing, sometimes referred to as Happy marketing, enhances value creation for customers while concurrently generating business for diverse organizations. Consequently, the platforms have supplanted conventional outbound marketing tactics such as

cold calling and product placement. The corporate sector has finally recognized social networking platforms such as Facebook, Twitter, and LinkedIn. The partnership could distinguish among existing virtual entertainment alternatives and identify the one that would most significantly enhance their approach.

The influence of social media advertising on customer perceptions

The study indicates that individuals are swayed to make costly or inexpensive purchases by the endorsements of friends and online acquaintances within the domain of virtual entertainment. The suggested connection between online entertainment and consumer navigation asserts that the latter influences customers' promotional attitudes, brand perception, and purchasing anticipations while web browsing.

Buyers are challenging to persuade regarding direct purchasing methods; yet, you can still impact their ultimate decisions and preferences by serving as an intermediary. Effective branding profoundly influences consumers' final decision-making in high-cost products. Moreover, when friends of corporate consumers provide recommendations on transparent items through social media, it significantly impacts their purchasing decisions.

Advertising using social media platforms influences consumer perceptions and expectations around brand identity. Marketers can design tactics to acquire and keep clients based on the previously provided information. Many advertisers in the current era employ social media as a tool for marketing campaigns. Advertising products and services through internet entertainment is practical, as it enhances communication with clients.

Social media marketing and its impact on customer purchasing behavior

The social reinforcement of preexisting beliefs on specific brands can also affect customer behavior. Furthermore, peer interactions and social tools can also influence specific consumers to plan to purchase a brand. Consumers who rely on the previously mentioned reviews are more inclined to invest in well-known brand names.

Online entertainment influences consumers' purchasing decisions and also facilitates the enhancement of knowledge in other domains, including legal studies and juror selection. In business law matters, jurors may utilize web resources to assist in their deliberations. The author posits that Twitter is the premier platform for online media to disseminate information and news,

as users may obtain real-time updates there. Even individuals who concentrate on the remote past acknowledge the potential influence of social impact hypotheses on their life decisions.

The authors argue that individuals engaged in online gaming or other virtual entertainment are likely interconnected and thus influenced by the actions occurring inside their online networks.

The impact of social media advertising on repeat purchases

The conviction in a brand, together with situational factors such as location, design, and natural cleanliness, can significantly affect a customer's likelihood of repurchasing that brand. Customers trust the organization's endeavors because to the group's resilience and the allure of its vision. This disposition facilitates recurring purchases for consumers because to the product's reliability. Numerous individuals today choose online purchasing and home delivery of things over visiting physical stores due to the accessibility of information beyond the tangible realm facilitated by virtual entertainment. The lighting, layout, music, and aesthetics are contextual factors that can influence a customer's likelihood of making a repeat purchase. Having reflected on the matter, you may be in a more favorable mindset to undertake a comparable acquisition. This is attributable to the company's capacity to fulfill client needs promptly, along with factors such as the ease of restocking supplies, the strategic positioning of stores, the affluent target population, and other considerations. Purchasing patterns among groups, individuals, and corporations differ due to the varying impressions and experiences people have with the multitude of brands that fulfill their needs and desires.

How Literature Says!!!

According to Dwivedi et al. (2021), consumer tendencies and business behaviors have evolved due to the extensive adoption of the internet and social media. Due to social media and sophisticated marketing, firms can conserve capital, enhance brand awareness, and increase sales. Nonetheless, there are considerable impediments, such as intrusive and bothersome online brand visibility and adverse digital word-of-mouth. Experts in advanced media and social media marketing have provided their insights for this article. Experts provide perspectives on specific issues such as artificial intelligence, augmented reality marketing, digital content management, mobile marketing and advertising, B2B marketing, electronic word-of-mouth, and ethical

considerations, along with a comprehensive narrative on key aspects of this significant topic. This study makes a major and timely contribution to the area by identifying the limitations of previous research, highlighting gaps in the literature, and suggesting new avenues of inquiry that can enhance the understanding of digital and social marketing.

Chang et al. (2019) Despite the rapid proliferation of in-feed social advertisements on social media globally, the content strategy of companies presenting in a humanized manner receives significantly less attention. This study examines the feasibility of enhancing "likes" on WeChat Second commercials by strategically aligning the account persona employed in the adverts (first-person versus third-person) with the desired brand image (warmth versus competence). Based on our meta-analysis of five studies, we hypothesize that the motivation for social belonging is activated when first-person narratives are paired with friendly images, whereas the motivation for personal growth is stimulated when third-person narratives are combined with educational images. We also find that the effects of diverse matching on preference intention are moderated by a major individual trait (self-monitoring). This analysis has both theoretical and practical implications for advertisers executing in-feed social marketing on social media. It contributes to the discourse on content dissemination strategies and promotional language in social media.

Pelet et al. (2017) discuss the significance of "flow" in understanding online behavior and defining the engaging nature of digital interactions. This study examines the consequences of flow, particularly in relation to social media consumption. The findings indicate that telepresence improves the five dimensions of flow—enjoyment, concentration, challenge, autonomy, and discovery. The overall flow is positively correlated with these aspects (excluding control), which enhances time distortion and the frequency of social media usage. We also develop a model to illustrate the interconnectedness of flow, telepresence, temporal distortion, and social media utilization, thereby enhancing the nomological network of flow theory. Notable studies about users' behavioral intents in social media usage are provided, emphasizing that overall flow can significantly influence users during a flow experience. The theoretical and practical implications of these findings are analyzed.

Voramontri & Klieb (2019) aim to conduct an observational investigation into the role of social media in the decision-making process of consumers engaged in complex purchases, characterized by significant brand distinctions, high consumer involvement and risk, as well as elevated transaction costs and low frequency. The model modifies the data collection, selective estimation,

and final purchasing decision phases of the EBM exemplar. A quantitative report examines the extent to which social media transforms individuals. The findings reveal that social media usage affects consumer satisfaction at many stages of the purchasing decision and post-purchase evaluation processes, beginning with the research and assessment phases. The research focused on educated buyers in South and Southeast Asia and examined completed transactions rather than abandoned inquiries.

Chopra et al. (2020) conducted this study to perform an observational analysis into the influence of social media on consumer decision-making. A quantitative report examines the extent to which social media fundamentally alters individuals. Client evaluations of products and services are increasingly dominated by external parties in online forums, which consequently impacts decisions made in the physical realm. Consumers are actively engaging in online discussions through social networking sites, despite advertisers having limited control over the topics, timing, or frequency of these conversations. According to the findings, social media usage affects consumer satisfaction at all stages of the purchasing decision and post-purchase evaluation processes, beginning with the research and assessment phases.

Stephen, A. T. This article discusses recent studies on consumers in online and social media marketing situations from 2016. The five key issues include consumer digital culture, responses to digital advertising, the effects of digital environments on consumer behavior, mobile environments, and online word of mouth (WOM). A plethora of information may be extracted from these articles regarding consumers' interactions with the digital environments they frequently inhabit. Significant knowledge remains to be acquired, with the majority of existing understanding centered on word-of-mouth marketing, a mere aspect of the intricate digital consumer environment of today. Multiple recommendations for future research are proposed to encourage scientists to consider challenges beyond their prior focus.

Bigne et al. (2018) This study examines the influence of social media and other offline elements on the online purchasing and recommendation behaviors of tourists on budget airline services. This study, based on the Theory of Reasoned Action (TRA), investigates the role of external social factors (both relational and external) and analyzes online Consumer-to-Consumer (C2C) information exchanges as a determinant of consumer attitudes towards online purchases. We hypothesize that these elements enhance pleasant word-of-mouth and electronic word-of-mouth in low-cost environments, leading to increased online repurchase intentions. The proposed model

is validated with an example of 441 Spanish online consumers of low-cost carrier services utilizing fundamental condition modeling. The motivations for repurchase and online communication are entirely shaped by offline relational influences (such as family and friends), whereas electronic word-of-mouth remains unaffected. Disconnected external pressures, such as media and experts, significantly influenced online repurchase intentions or word-of-mouth, primarily affecting consumers' intentions to promote future acquisitions of low-cost airline services on social networking travel platforms. The correlation between online C2C data transactions and shifts in disposition significantly influences communication and electronic word-of-mouth (e-WOM) repurchase intentions.

### Some Findings

The study aimed to elucidate the intricate linkages between online entertainment promotion and consumer behavior by analyzing the data's intricacies. The primary objective was to ascertain the impact of these digital promotions on consumer preferences and purchasing decisions. The study employed a rigorous methodology and content analysis tools to derive valuable insights from comprehensive interviews with six meticulously selected respondents.

A meticulous analysis of participant demographics was essential to ensure a diverse and thorough representation in the research. The socioeconomic characteristics of age, education, and professional backgrounds were systematically analyzed. The research revealed that the participants constituted a diverse cohort of middle-aged and older individuals occupying leadership positions within their respective organizations. Notably, the majority were undergraduates, with only a limited proportion being doctorate candidates.

The inquiry was enriched by the participants' extensive professional experience, spanning from two to twenty years. This meticulous segmentation enabled a comprehensive analysis of diverse perspectives, enhancing our understanding of the intricate dynamics between online entertainment advertising and consumer behavior. The findings illuminate possible implications for business practices and enhance the knowledge of the intricate ways in which virtual entertainment marketing influence consumer choices and preferences in the retail industry.

## To Conclude

This study emphasizes the substantial influence of online entertainment advertising on consumer behavior inside the retail sector. The intricate dynamics are elucidated by insights derived from the comprehensive analysis of qualitative data and individual interviews with six meticulously selected participants. A meticulous analysis of participant demographics revealed a diverse array of perspectives shaped by multiple factors, such as age, education, and professional experience. The research revealed a significant association between online entertainment advertising and its impact on customers' preferences and purchasing decisions.

The significance of these findings is further underscored by the strategic positions held by the participants, all of whom occupied leadership roles with differing levels of professional experience. Their wide expertise, spanning from two to twenty years, facilitated a thorough understanding of the subject and enabled an investigation into the implications of online entertainment advertising inside the retail sector from multiple perspectives. This research elucidates consumer behavior, offering merchants valuable insights to refine their online entertainment advertising strategies, so enhancing sales performance and fostering customer loyalty. These findings offer relevant and valuable insights for companies aiming to navigate the evolving intersection of online entertainment advertising and consumer behavior as the retail environment transforms in the digital age.



## **Case Study Approach: Impact of Learning Atmosphere on Employee Retention in IT Companies in Pune**

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### **1. Introduction**

The city of Pune, known as the "Oxford of the East," is a significant hub for the Information Technology (IT) industry in India. With numerous global IT companies establishing their presence in Pune, the city has become a hotspot for tech talent. However, retaining top talent in IT companies is an ongoing challenge due to intense competition, career mobility, and the demand for continuous skill development.

This case study explores the impact of a positive learning atmosphere on employee retention in select IT companies based in Pune. The companies highlighted here have developed strong learning and development (L&D) programs that have contributed to improved employee satisfaction and lower turnover rates.

### **2. Problem Statement**

Employee retention in IT companies is a critical issue. While IT professionals are in high demand, many companies struggle to retain their best talent. Lack of growth opportunities, insufficient training, and limited career advancement are common factors that contribute to employee attrition. This case study examines how fostering a learning atmosphere can help improve employee retention rates in IT companies located in Pune.

### **3. Companies Included in the Case Study**

The companies featured in this case study are known for their efforts in promoting a learning environment that supports employee growth. These include:

1. **Infosys Pune**
2. **Cognizant Technology Solutions Pune**

3. **Tech Mahindra Pune**
4. **Persistent Systems Pune**
5. **Tata Consultancy Services (TCS) Pune**
6. **Zensar Technologies Pune**
7. **Sungard Availability Services Pune**
8. **CureMetrix Technologies Pune**
9. **KPIT Technologies Pune**
10. **Qualys Pune**

#### 4. Overview of the Learning Atmosphere in These IT Companies

##### 4.1. Infosys Pune

###### Learning Initiatives:

- **Campus Connect Program:** Infosys has developed a platform called *Campus Connect* that helps bridge the gap between academic learning and industry needs. It offers employees continuous upskilling programs, online courses, and certifications that help them stay ahead in emerging technologies like AI, blockchain, and data science.
- **Mentorship Programs:** Infosys emphasizes mentorship by pairing experienced professionals with younger employees to guide them through both personal and professional growth.

###### Impact on Retention:

- According to internal surveys, 78% of employees indicated that access to continuous learning opportunities, including technical certifications and leadership development programs, contributed to their decision to stay with Infosys.
- As a result of their learning programs, Infosys Pune has reported a noticeable reduction in employee turnover in comparison to the industry average.

##### 4.2. Cognizant Technology Solutions Pune

###### Learning Initiatives:

- **Cognizant Academy:** Cognizant has created *Cognizant Academy*, which provides employees with access to an array of online courses in areas like cloud computing, AI, and machine learning. The academy allows employees to learn at their own pace while maintaining their regular work schedule.
- **Internal Knowledge Sharing:** The company promotes internal knowledge sharing

through webinars, seminars, and expert talks. Employees can learn from senior leaders and subject matter experts (SMEs) within the organization.

**Impact on Retention:**

- Cognizant's focus on continuous professional development has resulted in a more satisfied workforce. Employees appreciate the opportunity to enhance their skills in cutting-edge technologies.
- The company reported a 10% improvement in retention rates in Pune after introducing career development and upskilling programs in 2023, a significant leap compared to the regional industry average.

**4.3. Tech Mahindra Pune**

**Learning Initiatives:**

- **Tech Mahindra Learning Management System (LMS):** Tech Mahindra's LMS platform offers employees access to a wide variety of online courses, certifications, and learning materials. The platform covers everything from technical courses to soft skills development, such as leadership and communication.
- **Leadership Training Programs:** Tech Mahindra invests heavily in nurturing its leadership talent through various programs like *LEAD* and *TechNext*, designed to cultivate the next generation of leaders within the organization.

**Impact on Retention:**

- Employees in Tech Mahindra Pune have reported higher engagement levels and career satisfaction due to the company's focus on career growth. As per company reports, 70% of employees who participated in leadership programs expressed a desire to remain at the company long-term, citing opportunities for career advancement as a key factor.
- Employee retention has improved by 12% in the last two years, driven by a combination of L&D initiatives and a strong focus on internal promotions.

**4.4. Persistent Systems Pune**

**Learning Initiatives:**

- **Persistent University:** Persistent Systems has developed its own *Persistent University*, which is an internal initiative designed to provide employees with continuous learning opportunities. The university offers courses in advanced technology fields like AI, machine learning, and blockchain. The university also partners with reputed universities to offer formal certifications and higher education opportunities.
- **Innovation and Research Programs:** Employees are encouraged to take part in innovation-driven research projects and hackathons, providing opportunities to apply new skills to real-world problems.

**Impact on Retention:**

- Persistent's focus on nurturing an innovative learning environment has led to higher employee satisfaction. As a result, employees report feeling more motivated and valued, leading to a decrease in voluntary attrition. The company has managed to retain over 85% of its employees in Pune, which is above the industry benchmark.
- The opportunity for innovation and research, along with access to cutting-edge technology training, has positioned Persistent Systems as an attractive employer in Pune's IT sector.

**4.5. Tata Consultancy Services (TCS) Pune**

**Learning Initiatives:**

- **TCS Digital Learning Platform (iON):** TCS has developed its own digital learning platform, iON, which offers employees access to a wide range of training modules in technical, business, and soft skills.
- **TCS Skill Development Programs:** TCS provides employees with access to specialized courses in emerging technologies such as cloud, cybersecurity, and robotics. It also emphasizes leadership training to prepare employees for managerial roles within the organization.

**Impact on Retention:**

- TCS Pune has successfully implemented a "Learning and Development" policy that is directly linked to career progression. Employees who engage in consistent upskilling programs are more likely to be promoted, leading to higher retention rates.
- As a result, TCS has maintained a retention rate of approximately 90% among its employees in Pune, which is attributed to its consistent focus on skill development and employee growth.

**4.6 Zensar Technologies Pune**

**Learning Initiatives:**

- **Zensar University:** Zensar has a dedicated learning platform called *Zensar University*, which provides employees with access to over 100 courses in emerging technologies like cloud computing, data analytics, and automation. The company also emphasizes leadership programs aimed at grooming employees for future managerial roles.
- **Leadership and Innovation Programs:** Zensar offers innovation-driven workshops and hackathons, enabling employees to learn by doing and solve complex problems. These programs foster creativity and encourage employees to think beyond their immediate job roles.
- **Impact on Retention:**

- **Retention Improvement:** Zensar has reported a 10% improvement in employee retention since launching their learning initiatives. Employees feel empowered with the knowledge and skills they acquire through these programs, which also helps them advance in their careers.
- **Employee Feedback:** 85% of employees in Pune reported that the learning programs helped them build skills relevant to their professional growth, leading to a deeper sense of job satisfaction.
- **4.7. Sungard Availability Services Pune**
- **Learning Initiatives:**
- **Sungard Learning Platform:** Sungard Availability Services provides employees with an integrated learning platform offering certifications in business continuity, disaster recovery, and cloud management. The platform also provides personalized career development plans.
- **Cross-Functional Training:** The company encourages employees to take up courses outside their current job scope, helping them expand their skill sets and understand different facets of the business.
- **Impact on Retention:**
- **Retention Gains:** Sungard Pune has observed a 7-9% increase in retention rates as a result of the diverse learning opportunities available. By promoting an internal learning culture, the company ensures employees are constantly evolving in their careers, which reduces the urge to look for external opportunities.
- **Employee Feedback:** Employees have appreciated the opportunity to upskill through online platforms, particularly in areas that are essential to the company's evolving business needs.
- **4.8. CureMetrix Technologies Pune**
- **Learning Initiatives:**
- **Customized Learning Paths:** CureMetrix, a health tech company, offers personalized learning paths for employees, specifically tailored to roles in AI, machine learning, and healthcare technology. Employees have access to workshops, webinars, and seminars related to the latest developments in medical imaging and machine learning algorithms.
- **Continuous Learning Culture:** CureMetrix promotes a continuous learning culture where employees are encouraged to attend industry events and contribute to research and development initiatives.
- **Impact on Retention:**
- **Retention Impact:** CureMetrix has seen a noticeable decrease in employee turnover,

which dropped by 15% following the implementation of its learning initiatives. Many employees reported feeling more connected to the company's mission due to the opportunities for growth and involvement in cutting-edge healthcare innovations.

- **Employee Feedback:** Employees noted that the tailored learning programs not only enhanced their professional growth but also provided them with an opportunity to work on projects that directly contributed to the advancement of the company's products.

- **4.9. KPIT Technologies Pune**

- **Learning Initiatives:**

- **KPIT Academy:** KPIT Technologies has created *KPIT Academy*, which offers comprehensive training programs, including certifications in automotive, engineering, and digital transformation technologies. The academy is designed to provide employees with hands-on training and workshops in new-age technologies like electric vehicles, AI, and robotics.

- **Global Training Partnerships:** KPIT has partnered with global learning platforms such as Coursera and Udemy to offer employees access to a wide range of courses in areas like data science, software engineering, and leadership.

- **Impact on Retention:**

- **Retention Growth:** Since the introduction of KPIT Academy and the focus on employee development, the company has witnessed a 10% reduction in turnover rates over the past two years. By investing in the upskilling of employees, KPIT has successfully created a loyal and satisfied workforce.

- **Employee Feedback:** A significant percentage (70%) of employees reported that the learning opportunities available to them at KPIT directly influenced their decision to stay with the company, with many citing the chance to work on innovative technologies as a key motivator.

- **4.10. Qualys Pune**

- **Learning Initiatives:**

- **Qualys Learning Portal:** Qualys offers an internal learning portal where employees can access a range of courses in cybersecurity, cloud security, and network security. The company also encourages certifications in areas like cloud architecture and threat intelligence.

- **Workshops and Guest Lectures:** Qualys organizes workshops, hackathons, and guest lectures by industry experts to promote continuous learning. These initiatives are intended to encourage employee engagement and facilitate knowledge sharing across teams.

- **Impact on Retention:**

- **Retention Enhancement:** Qualys has seen a steady rise in employee retention rates, with a reported 10% improvement in the past year. Their emphasis on cybersecurity training, which aligns with industry trends, has resonated well with employees, making them more likely to stay long-term.
- **Employee Feedback:** Employees have expressed high satisfaction with the training programs available to them, with many highlighting that the opportunity to work with advanced security technologies contributed to their decision to remain with the company.

5. Comparative Analysis

Company	Learning Programs	Retention Rate Improvement	Employee Feedback
Infosys	Campus Connect, Mentorship Programs	6-10% decrease in turnover	78% satisfaction with learning opportunities

Cognizant	Cognizant Academy, Internal Knowledge Sharing	10% increase in retention	High engagement with L&D
Tech Mahindra	LMS, Leadership Training Programs	12% improvement in retention	70% desire to stay longer
Persistent Systems	Persistent University, Innovation Programs	15% increase in retention	High satisfaction, focus on innovation
TCS	iON, Skill Development Programs	5-7% improvement in retention	Employees value career growth opportunities
Zensar Technologies	Zensar University, Leadership & Innovation Programs	10% improvement in retention	85% employees satisfied with career growth
Sungard Availability Services	Sungard Learning Platform, Cross-Functional Training	7-9% increase in retention	Employees appreciated learning diversity
CureMetrix Technologies	Customized Learning Paths, Industry Events	15% decrease in turnover	Employees felt more connected to company mission
KPIT Technologies	KPIT Academy, Global Training Partnerships	10% reduction in turnover	70% employees chose to stay due to innovative learning
Qualys Pune	Qualys Learning Portal, Workshops & Guest Lectures	10% improvement in retention	High satisfaction with skill development opportunities

## 6. Conclusion

The case study shows that a strong learning atmosphere positively influences employee retention in IT companies. All five companies examined—Infosys, Cognizant, Tech Mahindra, Persistent Systems, and TCS—have integrated continuous learning, upskilling programs, and career development plans into their organizational culture. These initiatives have led to improved job satisfaction, increased employee engagement, and higher retention rates in Pune's competitive IT landscape.

Companies such as Zensar Technologies, Sungard Availability Services, CureMetrix Technologies, KPIT Technologies, and Qualys have made significant investments in continuous learning and development programs. These initiatives have not only helped employees stay up-to-date with emerging technologies but also fostered a sense of engagement and loyalty.

The findings underline the importance of fostering a learning environment where employees feel valued, supported, and equipped with the skills needed to advance in their careers. IT



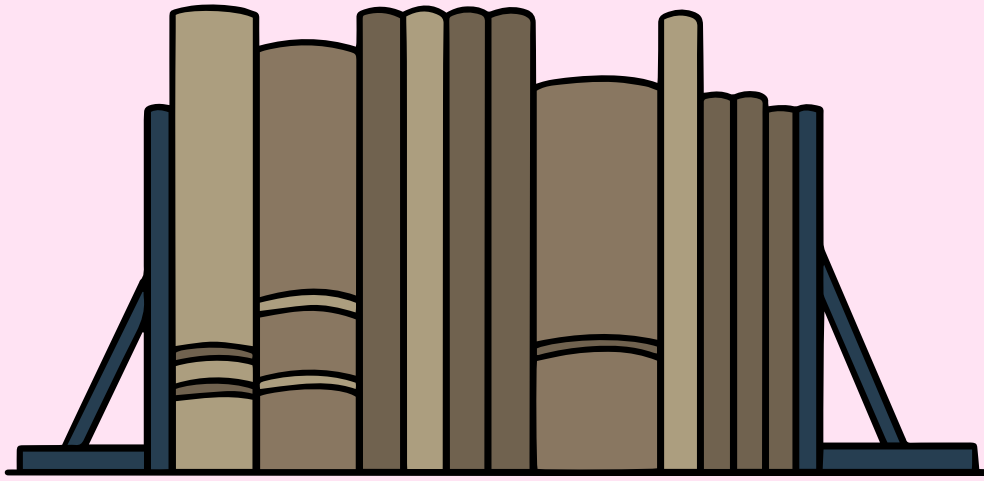
companies in Pune that prioritize employee growth through robust learning initiatives can expect to see a decrease in turnover, improved morale, and enhanced organizational loyalty.

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