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on
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Multidisciplinary Pathways
towards a Sustainable Future
(ICRIT-2026)

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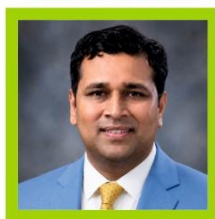
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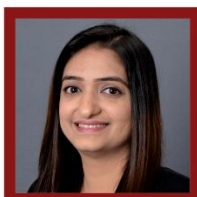


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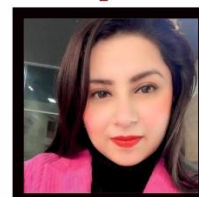


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KEY-PAPERS

ESG STARTS AT HOME: CONNECTING EVERYDAY CHOICES, DIGITAL INNOVATION AND SUSTAINABLE FINANCE

Dr. Ain Bemisal Alavi

Bath Spa University – RAK Campus, UAE

Sustainability is frequently framed through corporate reporting, investment decisions and national policy, yet its implementation also depends on everyday consumption, resource use and access to essential services. Environmental, social and governance (ESG) considerations connect these individual decisions with wider institutional responsibilities. Digital innovation and sustainable finance can support this connection by improving access, enabling investment and strengthening accountability. Their contribution, however, depends on whether sustainable alternatives are affordable, accessible and supported by credible evidence of environmental and social value.

From Everyday Decisions to Economic Strategy

Household decisions about purchasing, repair, resource use and saving connect everyday life with business strategy. Building on the perspective developed by Alavi (2026), this conceptual discussion argues that sustainable economies require alignment between consumer choices, business incentives, financial access and public infrastructure. It draws on selected institutional reports and published studies to develop practical strategic implications; it does not present new empirical data or an exhaustive systematic review.

ESG considerations direct attention to resource consumption, distributional effects and accountability. Applying these considerations to households extends the discussion beyond corporate reporting. However, describing purchases as economic votes has limits: spending power is unequal, and institutions shape the options available to consumers. Responsibility should therefore be considered alongside the capacity to act.

Food Waste: A Practical Test of Economic Efficiency

UNEP's Food Waste Index Report 2024 estimates that 1.05 billion tonnes of food waste were generated in households, food service and retail in 2022, including inedible parts; households accounted for 60% (UNEP, 2024). This is a resource-allocation problem: production, storage and distribution use resources without all the food delivering its intended value.

A practical response connects household planning with business design. Families can track avoidable waste before changing purchases. Retailers can test smaller packs and promotions that suit actual needs. University caterers can measure waste per meal, adjust portions and compare results. These are proposed actions, not guaranteed savings. Success should be measured through reduced avoidable waste and cost per meal while maintaining nutrition and affordability.

Choice Requires Affordable Alternatives

The IPCC estimates that demand-side measures could reduce emissions in buildings, land transport and food by 40–70% by 2050 relative to baseline scenarios. This potential combines behavioural change, infrastructure and technology; it should not be attributed to individual behaviour alone. The assessment also recognises that some populations need additional energy and resources for well-being (IPCC, 2022).

A hypothetical appliance purchase illustrates the affordability challenge. A more efficient model may cost less to operate but remain unaffordable upfront. A strategic response would test transparent financing, credible energy information and access to repairs. The decision should consider purchase price, operating costs, financing charges and expected life together. Sustainable consumption cannot be judged solely by willingness to pay a green premium.

Evidence from ASEAN illustrates the importance of the institutional context. Analysing 1995–2022, Shaikh et al. (2026) report that climate technology, environmental regulation and green energy were associated with lower carbon emissions, while growth and urbanisation remained emission-intensive. These

regional findings do not establish that household behaviour or digital finance caused emissions reductions. They nevertheless inform the argument that everyday action should be supported by cleaner infrastructure, investment and governance.

UAE Banking Research: Trade-Offs Over Time

Raza, Alavi and Asif (2024) examined UAE banking performance over 2002–2022 using economic, environmental and social indicators and autoregressive distributed lag approaches. Reported relationships differed across time horizons and profitability measures. The environmental indicator had a negative long-run association with return on assets but a positive association with return on equity; the social indicator was negatively associated with both measures in the short run and positively in the long run.

These findings require careful interpretation. The study used GDP growth, renewable energy and social services as proxies; it did not directly test household choices or individual banks' ESG programmes. It therefore cannot establish that a particular green product causes higher profits. A strategic implication is to assess financial and sustainability outcomes separately, over appropriate periods, and disclose trade-offs rather than assume immediate improvements across all measures.

Digital Finance: From Access to Meaningful Participation

The World Bank's Global Findex 2025 reports that nearly 80% of adults worldwide had financial accounts in 2024, while 1.3 billion remained without one. About 900 million unbanked adults owned a mobile phone (World Bank, 2025). This indicates an opportunity for digital delivery, but phone ownership alone does not establish affordability, trust or financial capability.

Almuete, Alavi and Khan (2026) surveyed 300 UAE residents across all seven emirates and reported a significant relationship between perceived inclusiveness and FinTech adoption outcomes. Survey associations should not be interpreted as evidence that adoption causes improved welfare. Providers should assess whether customers can complete essential transactions, understand charges and resolve problems. Continued use, failed transactions and complaints should be evaluated across income groups; downloads alone are insufficient evidence of inclusion.

A Strategic Agenda: Affordability, Access and Accountability

Three criteria are proposed to guide strategic decisions. Affordability concerns total costs and the distribution of upfront expenses. Access concerns participation among people with limited income, connectivity or digital skills. Accountability requires defined baselines, measurable outcomes and credible verification. These criteria organise the practical implications of the discussion and require further empirical validation.

Businesses should assign an operational owner and budget to each sustainability priority. Financial institutions should assess customer outcomes alongside commercial returns. Policymakers should examine whether infrastructure and incentives expand realistic choices. Universities can connect procurement, teaching and campus operations through projects that measure actual outcomes.

The organisational dimension is addressed by Khan et al. (2026) in their literature-based chapter on sustainability and strategic HRM in UAE hospitality. The chapter discusses green HRM, diversity and inclusion, and employee well-being across environmental, social and economic sustainability. A practical implication is to connect sustainability targets with staff capability and working conditions. For example, a hotel testing food-waste reductions could train kitchen teams, invite employee suggestions and monitor workload alongside waste per meal. This is an illustrative application, not a measured result from the chapter. Managers should assign responsibility, provide resources and review environmental outcomes alongside employee experience.

An illustrative implementation approach is a 90-day campus food-waste pilot comprising baseline measurement, identification of avoidable waste, testing of portion or purchasing changes, and evaluation. Indicators could include waste per meal, costs and satisfaction, with changes in menus and attendance considered when interpreting results. Reporting should include improvements and adverse



outcomes. Digital records can support evaluation, but measurement quality and responsibility for action remain essential.

Conclusion

The contribution of everyday choices to sustainability depends on coordinated institutional action. Consumer demand, business practices, financial access and governance jointly shape the opportunities for change. The proposed strategic priorities are to make sustainable alternatives affordable, accessible and credible. Progress should be assessed through resources saved, participation improved and outcomes demonstrated. Further research should test these priorities in specific organisational and community settings, including their distributional effects and implementation costs.

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ACCESSIBILITY OF DIGITAL BANKING SERVICES AS A DRIVER OF SUSTAINABLE RURAL BANKING DEVELOPMENT: AN EMPIRICAL STUDY FROM RURAL RAJASTHAN

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Abstract

Digital delivery channels are remodelling rural banking in India, but the effectiveness of the channels to sustainably develop rural banking institutions has not been adequately explored. This study investigates the impact of digital banking accessibility on customer satisfaction, financial inclusion and sustainable rural banking development of the customers of rural banks in Rajasthan. A quantitative cross-sectional design was used, and data were gathered from 384 respondents using a structured questionnaire with four constructs using 5-point Likert scales adapted from a published instrument. Data were analysed in IBM SPSS Statistics using one-way MANOVA, simple and multiple linear regression and Pearson correlation. Prior to hypothesis testing, the assumptions of normality, multicollinearity, homogeneity of variance and homogeneity of covariance were assessed for all constructs with coefficients ranging from .853 to .876. Digital banking accessibility was significantly positively related to customer satisfaction ($r = .682$, $p < .001$) and financial inclusion ($r = .640$, $p < .001$) and accounted for 53.3% of the variance in sustainable rural banking development. A significant multivariate difference was noted between the gender groups. The amount of variance explained by customer satisfaction and financial inclusion together was 54.8%. The findings put accessibility as a prerequisite and not a final goal of any rural digital banking strategy.

Keywords: Digital Banking Accessibility, Financial Inclusion, Customer Satisfaction, Sustainable Rural Banking Development, Rural Rajasthan, Multivariate Analysis

Introduction

The shift in banking delivery from intermediation at branches to digital intermediation is one of the most significant structural changes to hit emerging economies' financial sector. Policy measures, infrastructural expansions, and technology affordability have been driving this change in India. These initiatives have reduced the cost of financial inclusion for those who are usually not formally included in the financial system, such as the Pradhan Mantri Jan Dhan Yojana, the Aadhaar-enabled identity architecture and the Unified Payments Interface (Vyas & Jain, 2021).

However, these are not the same; one refers to digital infrastructure's introduction, while the other pertains to its development. New research suggests that literacy and trust and service reliability mediate the connection between digital financial services availability and their meaningful use (Kass-Hanna et al., 2022; Lyons & Kass-Hanna, 2021). Here accessibility is not just the presence of a channel but the customer's ability to experience it, understand it, use it and depend on it. The difference has institutional implications, as rural bank viability is based on productivity in small-ticket, high-frequency transactions that are possible through digital channels (Maity & Sahu, 2023). Where accessibility is real, the marginal cost of serving remote customers is lowered through digital delivery; where it's nominal, the same infrastructure is a stranded cost.

Although there is a certain overlap between these three lines of scholarship, which are largely independent, existing research in this domain has been conducted along three separate paths. Macroeconomic literature that connects digital financial inclusion indicators with aggregate outcomes (Amaliah et al., 2024; Anarfo & Abor, 2020; Emara & El Said, 2021); behavioural literature based on technology acceptance frameworks and their relation to digital financial inclusion adoption intention (Al-Saedi et al., 2020; Jha & Singh, 2020); and service management literature on satisfaction in e-banking (Balbin-Romero et al., 2022; Bhat & Gupta, 2024). This study seeks to investigate that separation by looking at, at the customer level, the relationship between accessibility and satisfaction, inclusion and perceived sustainability in

Rajasthan, a state that is geographically dispersed, has significant variation in district-level connectivity and an agrarian economy.

Literature Review and Hypotheses Development

- **Digital Banking Accessibility and Customer Satisfaction**

The dimensions of service quality are important and consistently modelled in electronic banking customer satisfaction. Accessibility and reliability are the service quality dimensions that are prominent in modelling electronic banking customer satisfaction. According to Balbin-Romero et al. (2022), who used the e-SERVQUAL framework, the most important factors that drive satisfaction in the context of internet banking services are efficiency and system availability. Ali et al. (2023) found that satisfaction is influenced by the efficiency of the internet banking service, which in turn affects loyalty. Bhat and Gupta (2024) discovered that the quality of e-services delivery had the most significant impact on the customers' level of trust and loyalty, especially in the case of customers who have limited access to physical infrastructure, while Jha and Singh (2020) observed that facilitating conditions had more influence than in rural samples compared to urban Indian samples.

H1: Digital Banking Accessibility is positively correlated with Customer Satisfaction.

- **Digital Banking Accessibility and Financial Inclusion**

Accessibility is typically broken down into three components: access, usage and quality, and it is considered to be located at the nexus between access and usage. Maity and Sahu (2023) showed that outreach to the branches was a positive step towards access but noted that outreach alone was not sufficient to ensure ongoing engagement, and Vyas and Jain (2021) showed that ease of reaching the services was the key factor in advancing technology adoption and, in turn, inclusion. Digital channels decrease transaction friction costs, which is especially critical for low-income, rural households that are sensitive to transaction friction (Das & Chatterjee, 2023; Ge et al., 2022; Singh & Stakic, 2021). There remains a limit, however, to the relationship: literacy (Kass-Hanna et al., 2022).

H2: Digital Banking Accessibility is positively correlated with Financial Inclusion.

- **Digital Banking Accessibility and Sustainable Rural Banking Development**

Sustainable rural banking development is the ability of rural banking institutions to continue to provide services over time without compromising financial sustainability, service quality or community relevance. Amaliah et al. (2024) revealed digital financial inclusion as a factor that foretells sustainable economic growth in an emerging economy, while Oanh and Dinh (2024) reported on digital financial inclusion's role in financial stability and sustainable development. The institutional-level mechanism is based on unit economics, with the rural branches having to manage high fixed costs because of low levels of transactions, while digital channels enable the sharing of these costs over a wider volume of transactions (Alshebami, 2021; Sarpong et al., 2023). The accessible channels also produce the transactional history used to analyse the credit of customers who do not have any conventional collateral (Abdennebi, 2023).

H3: Digital Banking Accessibility has a significant positive effect on Sustainable Rural Banking Development.

- **Demographic Differences in Digital Banking Services**

Gender is one of the most enduring dimensions of financial participation in the digital economy. Gupta and Kiran (2024) found that there was a high level of disaggregation in the level of sustainable digital financial inclusion among women, while Adegbite and Machethe (2020) observed a large inclusion gender gap in smallholder agriculture caused by asset ownership and mobility and access to devices rather than demand. As a result of these findings, Shehadeh et al. (2024) found that there was a moderating effect of gender on the relationship between digital financial literacy and cashless payment adoption. The four constructs are interrelated concepts and are also likely to co-vary across groups, and so a multivariate analysis will be used instead of a series of univariate analyses, and the Type I error inflation that would be associated with repeated univariate testing will be avoided.

H4: There is a statistically significant multivariate difference in Digital Banking Accessibility, Customer Satisfaction, Financial Inclusion and Sustainable Rural Banking Development across gender groups.

- **Customer Satisfaction and Financial Inclusion towards Sustainable Rural Banking Development**

Customer satisfaction and financial inclusion work in different but complementary ways. Satisfaction is the key to sustaining the customer relationship: When customers are satisfied, they carry balances, buy more products and create referrals, contributing to the stability of the funding base (Ali et al., 2023). Breadth is controlled by inclusion: when households which were previously out of the formal system move in, the AM and transaction size increase. Both are necessary because a satisfied institution with a small number of customers is loyal but not sustainable, and a large number of customers with low levels of satisfaction is sustainable but not loyal. The stability benefits of inclusion were found to depend on institutional quality by Ha and Nguyen (2023), while engagement and loyalty were found to work together in the creation of rural bank brand equity by Sarpong et al. (2023).

H5: Customer Satisfaction and Financial Inclusion significantly predict Sustainable Rural Banking Development.

- **Research Gap**

Three gaps emerge. First, the macroeconomic literature on digital financial inclusion uses primarily country- and district-based indicators and offers little insight into the perceptual pathways whereby access is felt by individual customers. Second, the technology adoption literature in the Indian rural setting ends at the behavioural intention stage, failing to explore the implications of realised accessibility for institutional sustainability (Al Tarawneh et al., 2023; Jha & Singh, 2020). Third, the investigation concerning sustainability in banking has focused mainly on the institutional and environmental aspects (Alshebami, 2021; Sarpong et al., 2023), rather than from the perspective of the customers who make up the institutions' survival.

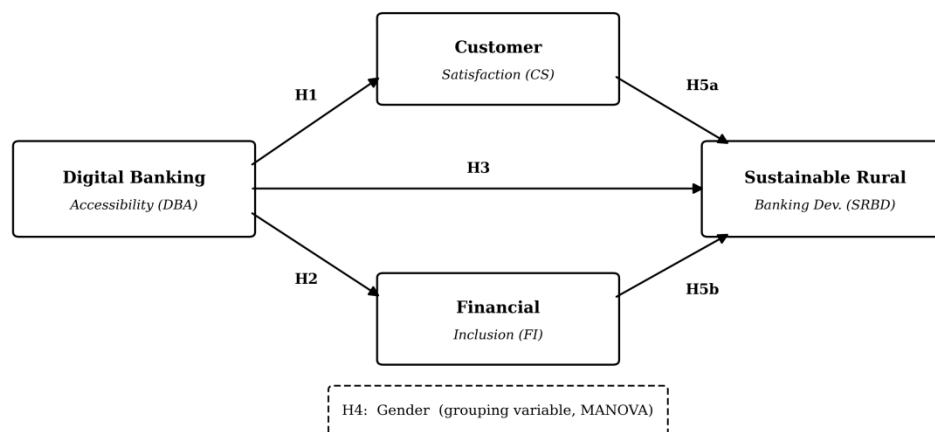


Figure 1: Conceptual Framework of the Study

Research Methodology

- **Research Design**

The design of this study is a quantitative, descriptive and causal-comparative design; it is appropriate to use because the purpose of the study is to know the size and significance of the relationship between the constructs being operationalised in the form of multi-item scales that have been validated. The analytical approach involves three steps: instrument reliability, verification of statistical assumptions, and hypothesis testing, ensuring that inferential conclusions are based on measurement properties and distributional conditions that have been explicitly investigated and not assumed.

- **Population and Sample**

The target population consists of rural bank customers from Rajasthan with an active account in one of the scheduled commercial banks (SCs) who have experienced digital banking channels in the last year. The constructs are experiential, and that is why rural banking customers of the state of Rajasthan who have at least once used a digital banking channel in the past one year in one of these scheduled commercial banks or regional rural banks or cooperative banks were selected as the target population. A sample of 384 respondents was drawn, which is the sample size needed to estimate a population proportion within 5% of the actual value, with the assumption of maximum variance. The convenience sampling method was used due to the lack of an adequate sampling frame of rural digital banking users.

- **Data Collection**

Data were collected through a structured questionnaire administered in person by trained field enumerators. Self-completion was not employed because variation in literacy levels would have resulted in systematic non-response by less literate respondents and thus biased the sample towards high-accessibility reports. The instrument was prepared in English and translated into Hindi by using translation and back-translation for semantic equivalence; participation was voluntary and anonymous. The procedural steps taken to prevent common method bias included randomising the order of construct blocks and reviewing the wording of the items. There are no missing data items in the final dataset for the 24 measurement items.

- **Measurement Instrument**

The questionnaire has two parts. It collects information on gender, age, educational qualification, occupation and monthly household income. It captures information on gender, age group, educational qualification, occupation and monthly household income. The second has 24 measurement items, evenly spread across the four constructs (six items per construct), each using a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. All items were adapted from published instruments to benefit from content validity, and each item was reworded for the context of rural Indian banking while retaining the conceptual meaning of the source item. No item is reproduced verbatim.

Table 1: Summary of Constructs and Measurement Sources

Construct	No. of Items	Source Instrument
Digital Banking Accessibility	6	Jha and Singh (2020) and Al-Saedi et al. (2020)
Customer Satisfaction	6	Balbin-Romero et al. (2022) and Ali et al. (2023)
Financial Inclusion	6	Maity and Sahu (2023) and Vyas and Jain (2021)
Sustainable Rural Banking Development	6	Sarpong et al. (2023) and Oanh and Dinh (2024)

Table 2: Variables and Their Analytical Roles

Variable	Role
Digital Banking Accessibility	Independent Variable (H1, H2, H3)
Customer Satisfaction	Dependent Variable (H1); Independent Variable (H5)
Financial Inclusion	Dependent Variable (H2); Independent Variable (H5)
Sustainable Rural Banking Development	Dependent Variable (H3, H5)
Gender	Grouping / Fixed Factor (H4)

The roles of customer satisfaction and financial inclusion are dual, as dependent variables in H1 and H2, respectively, and as predictors in H5, which is in line with the framework used to treat these as intermediate outcomes of accessibility. Construct-level total scores were obtained by summing the six constituent items (total range 6-30) for all correlation and regression analyses and were analysed as such, instead of individual items.

Results

- Demographic Profile

Table 3: Demographic Profile of Respondents (N = 384)

Variable	Category	Frequency	Percentage (%)
Gender	Male	213	55.5
	Female	171	44.5
Age	18-25 years	78	20.3
	26-35 years	126	32.8
	36-45 years	92	24.0
	46-55 years	58	15.1
	Above 55 years	30	7.8
Education	Up to Secondary	71	18.5
	Senior Secondary	89	23.2
	Graduate	134	34.9
	Post Graduate	68	17.7
	Professional/Other	22	5.7
Occupation	Agriculture	112	29.1
	Self-employed / Small Business	96	25.0
	Salaried (Private Sector)	74	19.3
	Government Service	51	13.3
	Daily Wage / Labour	33	8.6
	Student / Homemaker	18	4.7
Income	Below Rs.10,000	87	22.7
	Rs.10,000-20,000	121	31.5
	Rs.20,001-30,000	94	24.5
	Rs.30,001-50,000	55	14.3
	Above Rs.50,000	27	7.0
Experience	Less than 1 year	64	16.7
	1-3 years	138	35.9
	3-5 years	111	28.9
	More than 5 years	71	18.5

Table 3 presents the demographic composition. Male respondents constitute 55.5% and female respondents 44.5%, reflecting patterns of account-holding and independent device access rather than the underlying population sex ratio. The age range is focused on the economically active age groups, with the largest being 26 to 35 (32.8%) and over 55 (7.8%). The results are not limited to the digitally advantaged, as the largest category of education (34.9%) are graduates. Just over half of the sample comes from agriculture (29.1%) or self-employment or small business (25.0%), and 54.2% of reported monthly household income is below Rs. 20,000.

- Descriptive Statistics

Table 4: Descriptive Statistics for Composite Constructs (N = 384)

Construct	Min	Max	Mean	SD	Skewness	Kurtosis
Digital Banking Accessibility	6	30	21.40	5.233	-0.455	-0.322
Customer Satisfaction	6	30	21.47	4.901	-0.356	-0.460
Financial Inclusion	6	30	21.59	5.083	-0.400	-0.441
Sustainable Rural Banking Development	8	30	21.32	5.118	-0.376	-0.624

Table 4 reports descriptive statistics for the composite constructs. The mean scores fall closely within the range of 21.32 to 21.59 (across a potential range from 6 to 30), with the item-level means being approximately 3.55 to 3.60 with somewhat positive, but not consistently so, evaluations. The range of

standard deviations is between 4.90 and 5.23, which is adequate to correlate them in a meaningful way, with the highest being for digital banking accessibility (SD = 5.233). The negative skewness for all constructs ranges from -0.356 to -0.455 , which is within the limits of -2 to $+2$ (Kline, 2023), and the kurtosis ranges between -0.624 and -0.322 , which is within the limits of -7 and $+7$ (Kline, 2023).

- **Reliability Analysis**

Table 5: Cronbach's Alpha Reliability Coefficients

Construct	N of Items	Cronbach's Alpha	Interpretation
Digital Banking Accessibility	6	.876	Good
Customer Satisfaction	6	.853	Good
Financial Inclusion	6	.866	Good
Sustainable Rural Banking Development	6	.861	Good

Cronbach's alpha coefficients are given in Table 5. This is because the RIs for all items are above .80 for good internal consistency and do not approach the .90 or greater level, where item redundancy is a concern, with the highest RI at .876 for the digital banking accessibility measure and the lowest at .853 for customer satisfaction. The corrected item-total correlations for all 24 items range from .587 to .708, which is higher than the .30 minimum acceptable for item retention, and the alpha-if-deleted statistic does not exceed the alpha for the construct for any item. The instrument was thus kept intact.

- **Statistical Assumption Testing**
- **Normality**

Table 6: Tests of Normality

Construct	Shapiro-Wilk			Skewness	Kurtosis	Decision
	Statistic	df	Sig.			
Digital Banking Accessibility	0.971	384	.000	-0.455	-0.322	Normal
Customer Satisfaction	0.977	384	.000	-0.356	-0.460	Normal
Financial Inclusion	0.972	384	.000	-0.400	-0.441	Normal
Sustainable Rural Banking Development	0.970	384	.000	-0.376	-0.624	Normal

The normality diagnostics are presented in Table 6. The Shapiro-Wilk statistics are high (between .970 and .977) and suggest that the data are fairly normal in form, but the significance statistics are not greater than .05. This pattern needs to be interpreted instead of simply applying the significance criterion; the test is very sensitive to small deviations at large N, and each composite is the sum of six ordinal items which could assume only 24 different values; this discreteness is picked up by tests designed for continuous distributions. The usual one is thus to check for normality using the shape statistics. All skewness values are in the range of ± 2 , while all kurtosis values are in the range of ± 7 , and with N = 384, the sampling distributions are approximately normal due to the central limit theorem (Kline, 2023). Normality is considered fulfilled.

- **Multicollinearity**

Table 7: Multicollinearity Diagnostics

Predictor Construct	Tolerance	VIF	Decision
Digital Banking Accessibility	0.439	2.277	Satisfied
Customer Satisfaction	0.507	1.971	Satisfied
Financial Inclusion	0.561	1.784	Satisfied

The collinearity diagnostics are presented in table 7. The values of the variance inflation factors are between 1.784 and 2.277, and the corresponding tolerance values range between .439 and .561, which is very much below the commonly used 5 threshold and, indeed, below the more conservative 3 threshold. The VIF values for the two predictors in the H5 specification are 1.465 for both. The regression coefficients below therefore do not suffer from the effects of multicollinearity.

▪ **Homogeneity of Variance**

Table 8: Levene's Test of Equality of Error Variances

Dependent Variable	F	df1	df2	Sig.	Decision
Digital Banking Accessibility	0.266	1	382	.607	Satisfied
Customer Satisfaction	0.079	1	382	.779	Satisfied
Financial Inclusion	1.547	1	382	.214	Satisfied
Sustainable Rural Banking Development	0.059	1	382	.808	Satisfied

Table 8 shows the equality of error variances among the gender groups, performed by Levene's test. The F statistics range from .059 to 1.547, and the significance levels range from .214 to .808; both ranges are well above the threshold for significance, .05. No significant differences are found between the error variances for each dependent variable, and the assumption of homogeneity of variance is met.

▪ **Homogeneity of Covariance Matrices**

Table 9: Box's Test of Equality of Covariance Matrices

Box's M	F	df1	df2	Sig.	Decision
4.906	0.485	10	627,641.3	.901	Satisfied

Table 9 reports Box's test of equality of covariance matrices, yielding $M = 4.906$, $F(10, 627641.3) = .485$, $p = .901$. The significance value is very high ($> .05$), which leads to the retention of the null hypothesis that the covariance matrices are equal between the gender groups. The assumption of homogeneity of covariance is met for multivariate analysis of variance, and Wilks' lambda can be regarded as the main multivariate criterion.

• **Hypothesis Testing**

H1: Digital Banking Accessibility and Customer Satisfaction

Table 10: Pearson Correlation between Digital Banking Accessibility and Customer Satisfaction

Variables	N	Pearson r	Sig. (2-tailed)	Decision
Digital Banking Accessibility ↔ Customer Satisfaction	384	.682**	.000	Supported

Note. **Correlation is significant at the 0.01 level (2-tailed).

The Pearson correlation between digital banking accessibility and customer satisfaction is reported in table 10. Analysis shows $r = .682$ significant at $p < .001$ (2-tail, $N = 384$). The coefficient represents a very high positive linear relationship: the more accessible rural banking customers perceive digital channels, the more satisfied they are with their banking relationship. The coefficient of determination suggests that there is about 46.5% common variance in satisfaction and accessibility. H1 is accepted.

H2: Digital Banking Accessibility and Financial Inclusion

Table 11: Pearson Correlation between Digital Banking Accessibility and Financial Inclusion

Variables	N	Pearson r	Sig. (2-tailed)	Decision
Digital Banking Accessibility ↔ Financial Inclusion	384	.640**	.000	Supported

Note. **Correlation is significant at the 0.01 level (2-tailed).

The Pearson correlation for digital banking accessibility and financial inclusion is .640 at $p < .001$, as shown in Table 11. The association is positive and strong but slightly weaker than satisfaction and accounts for about 41.0% of the variance. There is a potential difference between the variables, satisfaction being an evaluative judgement made directly from the use of the channel of communication, while inclusion is a behavioural and structural variable that is further determined by factors such as income, documentation and literacy. H2 is accepted.

H3: Effect of Digital Banking Accessibility on Sustainable Rural Banking Development

Table 12: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.730	.533	.531	3.504	1.914

Table 13: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5343.991	1	5343.991	435.271	.000
	Residual	4689.967	382	12.277		
	Total	10033.958	383			

Table 14: Coefficients

Model	Unstandardized Coefficients		Std. Coeff.	t	Sig.	Decision
	B	Std. Error	Beta			
(Constant)	6.044	0.754		8.017	.000	
Digital Banking Accessibility	0.714	0.034	.730	20.863	.000	Supported

Tables 12 to 14 present a simple linear regression of sustainable rural banking development on the three composite scores of digital banking accessibility. According to the model summary, the model explains 53.3% of the variance in perceived sustainable rural banking development with $R = .730$ and $R^2 = .533$, which has an adjusted R^2 of .531 and a standard error of estimate of 3.504; this effect is quite large for a cross-sectional behavioural study. The Durbin-Watson statistic is 1.914, which signifies that there is no material residual autocorrelation. The analysis of variance confirms model significance, $F(1, 382) = 435.271$, $p < .001$, with a regression sum of squares of 5343.991 against a total of 10033.958. The standardised coefficient of $\beta = .730$, with the standard deviation of the accessibility total score being .034, means that each one-point increase in the accessibility total score was linked to an increase of approximately 0.730 points. 714 points in the sustainability total score, and the constant of 6.044 is also significant. H3 is accepted.

H4: Multivariate Differences across Gender

Table 15: Box's Test of Equality of Covariance Matrices (MANOVA)

Box's M	F	df1	df2	Sig.	Decision
4.906	0.485	10	627,641.3	.901	Satisfied

Table 16: Multivariate Tests

Effect	Value	F	Hypothesis df	Error df	Sig.	Partial η^2
Wilks' lambda	.944	5.606	4.000	379.000	.000	.056
Pillai's trace	.056	5.606	4.000	379.000	.000	.056
Hotelling-Lawley trace	.059	5.606	4.000	379.000	.000	.059
Roy's greatest root	.059	5.606	4.000	379.000	.000	.059

Table 17: Tests of Between-Subjects Effects

Dependent Variable	Type III SS	df	Mean Square	F	Sig.	Partial η^2
Digital Banking Accessibility	372.717	1	372.717	14.078	.000	.036
Customer Satisfaction	290.681	1	290.681	12.464	.000	.032
Financial Inclusion	498.883	1	498.883	20.283	.000	.050
Sustainable Rural Banking Development	260.594	1	260.594	10.186	.002	.026

One-way multivariate analysis of variance with gender as the fixed factor is reported in Tables 15 to 17. Once the assumptions listed in Tables 8 and 9 have been met, Wilks' lambda is the main criterion used. As in a design with two groups and the criteria are algebraically equivalent (as is the case here), the

multivariate test gives the same F and significance as Pillai's trace, Hotelling's trace, and Roy's largest root (all are .056 and $<.001$, respectively). The results of between-subjects tests show that this difference is shown in each dependent variable separately. Financial Inclusion exhibits the largest univariate effect, $F(1, 382) = 20.283$, $p < .001$, partial $\eta^2 = .050$ ($M = 22.61$ male, 20.32 female), followed by Digital Banking Accessibility, $F(1, 382) = 14.078$, $p < .001$, partial $\eta^2 = .036$; Customer Satisfaction, $F(1, 382) = 12.464$, $p < .001$, partial $\eta^2 = .032$; and Sustainable Rural Banking Development, $F(1, 382) = 10.186$, $p = .002$, partial $\eta^2 = .026$. What is striking is the uniformity of direction across all four constructs, albeit modest effect sizes, suggesting a gradient of the construct rather than a binary distinction. H4 is accepted.

H5: **Customer Satisfaction and Financial Inclusion as Predictors**

Table 18: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.741	.548	.546	3.448	1.834

Table 19: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5503.057	2	2751.529	231.374	.000
	Residual	4530.901	381	11.892		
	Total	10033.958	383			

Table 20: Coefficients

Model	Unstandardized Coefficients		Std. Coeff.	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	2.818	0.878		3.209	.001		
Customer Satisfaction	0.445	0.044	.426	10.235	.000	0.683	1.465
Financial Inclusion	0.414	0.042	.411	9.869	.000	0.683	1.465

Multiple linear regressions of sustainable rural banking development on customer satisfaction and financial inclusion are presented for the composite total score in tables 18-20. The model has an $R = .741$ and an $R^2 = .548$, an adjusted $R^2 = .546$ and a standard error of estimate of 3.448, and the two predictors together explain 54.8% of the variance. The Durbin-Watson statistic value of 1.834 suggests good residual independence, and the analysis of variance results shows that the model is significant, $F(2, 381) = 231.374$, $p < .001$, with a regression sum of squares of 5503.057 larger than the sum of squares for the single-predictor model presented for H3. Both predictors contribute significantly and independently: customer satisfaction yields $B = .445$ ($SE = .044$), $\beta = .426$, $t = 10.235$, $p < .001$; and financial inclusion yields $B = .414$ ($SE = .042$), $\beta = .411$, $t = 9.869$, $p < .001$. The coefficients are similar in absolute size to one another (as reflected in the very close parallels between the standardised ones), and the collinearity diagnostics confirm the stability of the estimates (tolerance = .683, VIF = 1.465). H5 is accepted.

Discussion

The results confirm that accessibility is not an end goal but is instead a starting point in the rural digital banking relationship. The correlation between digital banking accessibility and customer satisfaction is statistically high ($r = .682$), and it corroborates with the e-SERVQUAL findings of Balbin-Romero et al. (2022) and supports Ali et al. (2023), who found that service efficiency is key in e-ServQual. This is higher compared to urban samples and is expected when the closest branch is a significant distance away, as expected by Jha and Singh (2020), where channel failure is defined as loss of access to the channel. The weaker association with financial inclusion ($r = .640$) follows the distinction between evaluative and behavioural outcomes; Kass-Hanna et al. (2022) noted that the impact of financial access depends on

literacy, while Maity and Sahu (2023) came to a similar conclusion regarding branch outreach. This difference between availability and utilisation is then considered channel-invariant.

At the customer-perceptual level, accessibility explains 53.3% of the variance in perceived sustainable rural banking development, supporting the association with sustainable rural banking development that was previously found at the macroeconomic level by Amaliah et al. (2024) and Oanh and Dinh (2024). Causes can't be deduced from cross-sectional data: customers with a positive attitude towards their bank due to its institutional strength will also rate their channels positively. The multivariate gender differences show a similar pattern reported by Gupta and Kiran (2024), Adegbite and Machethe (2020) and Shehadeh et al. (2024) but are slightly different in magnitude. Partial eta-squared values ranging from .026 to .050 are statistically significant but small, representing 2.6% to 5.0% of construct variance and indicating that the magnitude of the differences observed elsewhere are mostly at the point of entry and not in the quality of the subsequent experience.

The standardised coefficients for Customer Satisfaction ($\beta = .426$) and Financial Inclusion ($\beta = .411$) are very close to each other, indicating that both types of factors have a similar impact on the customer's perception of institutional durability and that neither is more important than the other. This confirms that the focus in some portions of the inclusion literature is placed on coverage as the key developmental goal, as highlighted by Ha and Nguyen (2023) and Sarpong et al. (2023). When taken together, the results indicate that the two intermediary constructs ($R^2 = .548$) contribute more than accessibility alone ($R^2 = .533$), thus pointing to a sequential rather than a direct account. This is in line with, but not a demonstration of, a mediated structure, with formal mediation testing outside of the analytical scope specified.

Implications

• Theoretical Implications

The paper is theoretically relevant with three points. Firstly, it moves the digital financial inclusion literature from the macroeconomic to the customer-perceptual level, irrespective of the macroeconomic level associations reported by Amaliah et al. (2024) and Emara and El Said (2021). Second, it extends the notion of accessibility beyond availability to consider it as a perceived ability, including reachability, comprehensibility, operability and reliability. Finally, it brings the concept of sustainability as a customer perception construct into rural banking research, which has hitherto largely been framed and studied through institutional and environmental lenses (Alshebami, 2021; Sarpong et al., 2023).

• Practical Implications

The relationship of accessibility with satisfaction is relatively strong, suggesting that efforts to make channels more reliable are rewarded with a higher satisfaction level than in urban areas and that uptime, low-bandwidth performance and offline transaction capability should be given more weight in rural technology choices. The lower association score signals the need for assisted onboarding and vernacular interface design and business correspondent support to build the capacity of the channels in association with their deployment. The near equality of satisfaction and inclusion indicates that if service quality is not matched with the targets for account openings, the results are likely to be dormancy instead of sustained growth.

• Policy Implications

There are thus three policy implications. First, the availability statistics, as recorded through account opening counts, and channel availability statistics do not measure accessibility to the programme, as transaction success rates, dormancy rates and assisted transaction ratios would. Secondly, telecommunications policy and financial inclusion policy are interconnected due to the inclusion of network conditions in the accessibility construct. Thirdly, the gender results are generally similar, suggesting the need for gender disaggregated monitoring and targeted interventions in onboarding, not differentiated service provision.

Conclusion



All five hypotheses were supported: accessibility was strongly and positively correlated with satisfaction ($r = .682$) and inclusion ($r = .640$), and these variables together explained 53.3% of the variance in perceived sustainable rural banking development; satisfactory multivariate differences were found across the gender groups; and satisfaction and inclusion together accounted for 54.8% of the variance in perceived sustainable rural banking development. The summative finding is that while accessibility can be a result of sustainable rural banking, it is also an antecedent condition for it. Infrastructure provides the potential for an inclusive channel but does not define it; the accessibility of a channel is a worthy target for measurement and management and a separate issue of strategy from the channel's existence.

Limitations and Future Research

Several limitations qualify these findings. Convenience sampling was used due to the lack of an exhaustive source list of rural digital banking users and cannot be assumed as representative; respondents who were approached at bank premises, business correspondent points and market locations are systematically the ones who are engaged with formal channels, making estimates of accessibility and inclusion to be biased upwards. Because the design is cross-sectional, one cannot draw causal inferences. All constructs were measured using self-report, which could have led to common method variance, but no statistical remedy was employed, such as a marker variable. The sustainability was assessed by customer perception and not institutional financial measures. The study is limited to one state only, and gender was dichotomised.

Further studies should use longitudinal designs to determine whether accessibility change is a predictor of inclusion and satisfaction and to use formal mediation models using structural equation modelling to test the proposed sequential model. Comparative studies from around the country (multi-state) would determine if relationships are similar or different in various infrastructural settings. The addition of digital financial literacy as a moderator would allow for direct assessment of the conditional relationship proposed by Kass-Hanna et al. (2022).

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ABSTRACTS

INDIA- CHINA ECONOMIC RELATIONS DURING COVID -19: IMPACT, CHALLENGES AND CHANGING DYNAMICS**Aarti**

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The COVID-19 pandemic did not alter India-China economic relations in a single direction. In 2020, global supply chains were disrupted, transportation costs increased, demand for health-related goods rose sharply, and domestic industries faced renewed concerns regarding the availability of raw materials and intermediate goods. Nevertheless, bilateral merchandise trade between India and China did not come to a halt. Before the pandemic, bilateral merchandise trade stood at approximately US\$87.07 billion in 2018–19; it declined to US\$81.87 billion in 2019–20 and recovered to US\$86.40 billion in 2020–21. Thereafter, the volume of trade increased rapidly, but the growth was largely driven by India's imports from China. In 2024–25, India's imports from China amounted to US\$113.45 billion, while exports stood at US\$14.25 billion, resulting in a trade deficit of US\$99.20 billion. The latest Indian diplomatic trade summary for 2025–26 reports the trade deficit at approximately US\$112.16 billion. (Government of India, Ministry of Commerce and Industry, 2022; Embassy of India, Beijing, 2026) This chapter examines India-China economic relations across three phases: the pre-pandemic period, the pandemic period, and the post-pandemic period. The analysis focuses on four major questions: how bilateral trade and the trade deficit changed; what impact the pandemic had on GDP growth in India and China; how e-commerce transformed consumption and distribution patterns; and which products became strategically important during the pandemic. The analysis uses data from the Government of India, the World Bank, China's National Bureau of Statistics, UNCTAD, IBEF, and other reliable sources. Since different sources use different definitions of financial years, calendar years, and market values, comparisons are indicative wherever necessary. The major findings indicate that the pandemic did not bring India-China trade to an end; rather, it made the nature of economic dependence more visible. In 2020, the shock to India's GDP was deeper than that experienced by China, while India witnessed a relatively rapid recovery in 2021. E-commerce expanded rapidly in both economies; however, China's online retail sector was already more developed and mature.

DIGITAL, MULTIDISCIPLINARY MODERN EDUCATION, SCIENCE, TECHNOLOGY IN FUTURE OPPORTUNITY AND CHALLENGES**Dr. Munna Lal Yadav**

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Education is fundamental for achieving full human potential, developing an equitable and just society, and promoting national development. Providing universal access to quality education is the key to India's continued ascent, and leadership on the global stage in terms of economic growth, social justice and equality, scientific advancement, national integration, and cultural preservation. Universal high-quality education is the best way forward for developing and maximizing our country's rich talents and resources for the good of the individual, the society, the country and the world. India will have the highest population of young people in the world over the next decade, and our ability to provide high-quality educational opportunities to them will determine the future of our country. Given the 21st century requirements, quality higher education must aim to develop good, thoughtful, well-rounded and creative individuals. It must enable an individual to study one or more specialized areas of interest at a deep level, and also develop character, ethical and Constitutional values, intellectual curiosity, scientific temper, creativity, spirit of service and 21st century capabilities across a range of disciplines including sciences, social sciences, arts, humanities, languages, as well as professional, technical and vocational subjects. A quality higher education must enable personal accomplishment and enlightenment, constructive public engagement and productive contribution to the society. It must prepare students for more meaningful and satisfying lives and work roles and enable economic independence.

THERMAL RADIATION AND ACTIVATION ENERGY EFFECTS IN THIRD-GRADE FLUID FLOW OVER A STRETCHING SURFACE

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This study deals with heat and mass transfer in third grade fluid flow influenced by a permeable radially stretching sheet in porous medium. The effects of various factors relevant to fluid flow, heat, and mass transport like thermal radiation, activation energy, chemical reaction, and suction/injection are taken into consideration. The governing partial differential equations are reduced into ordinary differential equations under suitable similarity transformation relations in non-dimensional form. After that the problem is solved numerically utilizing MATLAB based bvp4c function. Various graphs are drawn to depict the influence of numerous parameters appeared in the problem on fluid flow, temperature, and mass distribution and discussed. Moreover, other relevant physical quantities (skin friction coefficient, Sherwood number, and Nusselt number) are computed, displayed in tabular mode and discussed.

**HOUSEKEEPING SERVICE QUALITY AND EMOTIONAL SATISFACTION AMONG RESORT GUESTS:
AN EMPIRICAL INVESTIGATION**

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Housekeeping is one of the most visible yet often underexplored components of the resort guest experience. Beyond maintaining cleanliness and order, housekeeping services can influence guests' comfort, perceptions, emotions, and overall satisfaction with their stay. This review paper examines the relationship between housekeeping service quality and emotional satisfaction among resort guests, with particular attention to the practices that contribute to memorable experiences and positive behavioural intentions. A systematic literature review was conducted using relevant studies published from 2020 onwards, with emphasis on research indexed in Scopus, Web of Science, and other reputable academic sources. The selected literature was reviewed thematically to identify major dimensions of housekeeping service quality and their influence on guest emotions and satisfaction. The review indicates that cleanliness and hygiene, room presentation, attention to detail, responsiveness, timeliness, professionalism, personalized service, privacy, and consistency are important contributors to positive guest experiences. The findings further suggest that housekeeping quality is not limited to functional performance; small service details and personalized touches can generate feelings of comfort, care, trust, and emotional attachment. These emotional responses can strengthen overall satisfaction and contribute to memorable experiences, revisit intentions, and positive word-of-mouth. The review highlights the need for resorts to view housekeeping as an experiential service rather than merely a back-of-house operational function. It concludes that integrating service quality standards with personalized and emotionally attentive housekeeping practices can provide resorts with an effective approach to improving guest satisfaction and long-term loyalty.

GEN Z AND SOCIAL MEDIA PURCHASE BEHAVIOR: EXAMINING INFLUENCER RECOMMENDATIONS AND MEME CONTENT IN CHHATRAPATI SAMBHAJINAGAR

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Gen Z consumers are highly engaged with social media and often use these platforms as part of their shopping journey. This study examined social media factors associated with the purchase decisions of Gen Z consumers in Chhatrapati Sambhajinagar. Data collection was done through a questionnaire-based survey generating 204 responses from Gen Z individuals and the data were further analyzed using descriptive statistics, visualizations, the Chi-square test, and Cramér's V. Instagram was the most used social media platform, with 60.78% of participants choosing it over other platforms. Influencer trustworthiness was significantly associated with purchasing a product or service solely based on a social media recommendation, $\chi^2(4) = 33.55$, $p < .001$. Similarly, the types of memes participants enjoyed most were significantly associated with their likelihood of purchasing a product after seeing a viral meme, $\chi^2(8) = 16.73$, $p = .033$. As some cells had expected frequencies below 5, a Monte Carlo procedure was additionally performed, which produced a similar significant result ($p \approx .032$). Overall, the findings indicate that Instagram, influencer recommendations, and meme content are relevant elements of the social media environment associated with Gen Z consumers' purchase-related responses. Marketers targeting this demographic may therefore consider using influencers and engaging meme content, particularly on Instagram, as part of their social media strategies.

ROLE OF AI IN DIGITAL SOCIETY IN DEMOGRAPHIC SHIFT OF INDIA

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Artificial Intelligence (AI) is rapidly transforming digital society and influencing demographic, economic, and social changes in India. As India experiences population growth, urbanization, migration, changing age structures, and an expanding working-age population, AI is becoming an important force in shaping these transitions. This paper examines the role of AI in India's evolving digital society and its impact on demographic shifts. It explores the influence of AI on employment, education, healthcare, governance, financial inclusion, skill development, and access to digital services. AI offers opportunities to improve productivity, create new employment avenues, support an ageing population, and enhance public service delivery. Although challenges such as the digital divide, unequal access to technology, job displacement, algorithmic bias, data privacy concerns, and varying levels of digital literacy may increase existing inequalities. The study concludes that inclusive infrastructure, ethical governance, education, and reskilling are essential to ensure that AI contributes to sustainable and equitable demographic development in India.

TUTORS STUDIO: AN AUTONOMOUS FRAMEWORK FOR AI-DRIVEN EDUCATIONAL VIDEO SYNTHESIS

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The rapid growth of online education has greatly increased the demand for high-quality teaching materials. Yet, individual educators still have to use a fragmented and time-consuming set of manual



procedures which involve 4 to 5 different tools for scripting, making slides, recording, editing, and publishing — a process that takes between 2 and 4 hours for each lesson. This paper introduces Tutors Studio, an AI-driven, API-free web platform that automates the production of teaching scripts organised according to sound pedagogical principles and narrated educational videos by means of a 10-stage intelligent process. The system makes use of a Retrieval-Augmented Generation (RAG) architecture together with a locally fine-tuned language model (Phi-3 via QLoRA) to produce full teaching scripts, including titles, hooks, learning objectives based on Bloom's Taxonomy, structured explanations, summaries, and practice questions. A six-criteria quality scoring rubric is applied to ensure pedagogical rigor, and an integrated hallucination checker cross-references the generated content with a curated NPTEL knowledge base. The scripts that have been validated are then turned into narrated MP4 videos by means of a pipeline that combines neural Text-to-Speech (Edge-TTS) with automatically generated slides (Pillow) and video assembly (MoviePy). The platform, which has been developed using Python and Flask, cuts the time needed to create each lesson down to under 10 minutes without incurring any repeated API costs. By enabling affordable, accessible, and AI-assisted education in settings with limited resources.

HUMAN RESOURCE ACCOUNTING INFORMATION AND INVESTMENT EVALUATION: EVIDENCE FROM INDIVIDUAL RETAIL INVESTORS IN KARNATAKA

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Human Resource Accounting Information (HRAI) gives details about an organisation's human resources and can provide investors with additional information for evaluating investment opportunities. However, its effective use is influenced by investors' level of knowledge, their perception of its relevance and the ease with which the information can be accessed, understood and evaluated. The present study examines the knowledge, perceived usefulness and hindrances associated with HRAI among NSE-registered individual retail investors in Karnataka. A quantitative descriptive research design was adopted, and data were collected from 287 individual retail investors using a structured questionnaire administered through both online and offline modes. The HRAI items were classified into five dimensions through Exploratory Factor Analysis (EFA), namely HR Valuation, HR Composition, HR Performance, Employee Benefits and Employee Governance. The responses were analysed using descriptive statistics and one-sample t-tests. The results indicate that investors have a low level of knowledge across all five dimensions, with the mean scores of the individual knowledge items falling below the scale average. In contrast, respondents expressed a high level of perceived usefulness of HRAI for investment evaluation, with mean scores ranging from 4.33 to 4.41. HRAI was particularly perceived as useful for comparing companies, assessing investment in human resources and their contribution to company performance, and evaluating investment opportunities. The findings also reveal substantial hindrances in accessing and evaluating HRAI, with mean scores ranging from 4.35 to 4.51. Information overload, inconsistent measurement criteria, selective disclosure, technical complexity and the absence of a uniform reporting framework were among the key hindrances identified by the respondents. Overall, the findings indicate a gap between investors' limited knowledge of HRAI and their recognition of its usefulness, highlighting the need for greater consistency, clarity and effective presentation of human resource information in corporate reporting.

RECENT BREAKTHROUGHS AND EMERGING TRENDS IN CLEAN ENERGY TECHNOLOGIES**Atul Kumar Agarwal**

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The global transition toward carbon neutrality has accelerated the development and deployment of next-generation clean energy technologies designed to overcome the intermittency, storage, and scalability limitations of traditional renewable systems. This review summarizes recent technical advancements across key clean energy domains, highlighting key operational mechanisms, efficiency gains, and integration challenges.

- **Advanced Photovoltaics & Solar Harvesting:** Transitioning beyond traditional single-junction silicon cells, recent research emphasizes perovskite-silicon tandem solar cells, achieving laboratory power conversion efficiencies exceeding 33%. Additionally, novel photocatalysts and dye-sensitized solar cells (DSSCs) incorporating bio-derived nano-additives show promise for enhanced low-light conversion efficiency.
- **Next-Generation Energy Storage:** Long-duration energy storage (LDES) solutions are evolving to manage microgrid and grid-scale intermittency. Thermal energy storage (TES) utilizing phase change materials (PCMs) enhanced with novel fin geometries has demonstrated up to 63% higher storage capacities and accelerated thermal charging responses. Concurrently, battery management systems leveraging Deep Learning (e.g., Long Short-Term Memory models) optimize real-time charge-discharge cycles, reducing microgrid operational costs.
- **Green Hydrogen & Synthetic Fuel Carriers:** Electrolyzer technology advances—particularly Proton Exchange Membrane (PEM) and Solid Oxide Electrolyzers (SOEC)—are reducing the levelized cost of green hydrogen production, positioning green hydrogen as a primary zero-emission energy carrier for decarbonizing hard-to-abate heavy industries and freight transportation.
- **Grid Management & Smart Infrastructure:** Artificial Intelligence (AI) and Machine Learning (ML) algorithms are increasingly integrated for hyper-accurate solar and wind forecasting, dynamic load balancing, and building thermal management, addressing the built environment's massive energy footprint.

Overall, while technology cost reductions and efficiency improvements are rapidly progressing, widespread adoption requires scaling up supply chains, developing robust infrastructure, and deploying intelligent energy management systems.

FORENSIC GENETICS IN THE MODERN INDIAN CRIMINAL JUSTICE SYSTEM: EVIDENTIARY RELIABILITY, BEHAVIORAL GENETICS, CRIMINAL RESPONSIBILITY AND THE RIGHTS OF THE ACCUSED**Avinash Murlidhar Deshmukh**

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The rapid development of forensic genetics has transformed the relationship between science and criminal justice. DNA profiling has emerged as one of the most powerful forensic techniques for establishing identity, linking biological material to individuals, excluding innocent persons, identifying victims and unknown deceased persons, and strengthening the evidentiary foundation of criminal investigations. At the same time, the increasing use of genetic information by law-enforcement agencies creates complex questions concerning evidentiary reliability, scientific validity, privacy, bodily autonomy, self-incrimination, due process, data protection, and the constitutional rights of accused persons. In India, these concerns have become particularly significant following the introduction of the new criminal-law framework comprising the Bharatiya Nyaya Sanhita, 2023, the Bharatiya Nagarik Suraksha Sanhita, 2023 and the Bharatiya Sakshya Adhiniyam, 2023,

which came into force on 1 July 2024. This paper critically examines the emerging legal architecture governing forensic genetics in India and evaluates whether the existing framework adequately reconciles the interests of criminal investigation with the rights of individuals. Most important part is the conceptual relationship between genetics, DNA evidence and criminal law. DNA profiling is fundamentally an identification technology: a DNA profile derived from biological material may assist in determining whether a biological sample is consistent with that of a particular individual person. However, the scientific significance of a DNA sample match should not be confused with an automatic consideration of guilt. A genetic association may establish a biological connection, but questions concerning how, when and under what circumstances biological material came to be present remain matters requiring independent investigation and corroboration. Consequently, forensic genetics must be situated within the broader principles of criminal adjudication, including the presumption of innocence, burden of proof, proof beyond reasonable doubt and judicial assessment of the totality of evidence.

THIRD GENDER : ANALYSIS OF WORLDWIDE PRINCIPLES

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The third gender is a social group that has existed alongside men and women throughout history. The concept of third gender has growing social, legal, cultural and human right discourse. Even though of protections in national and international wide, third gender individual has been abandon community throughout the world. Some countries, there is recognition rejection of their rights and are at times forced to lead bandits survival life. In India third gender community comprise persons with a variation of gender identities and sexual orientations, creating a culturally unique gender group. Third gender persons have been stigmatized and marginalized to a large extent. This research paper investigates the important principles related third gender. This principle particular emphasis on gender identity, dignity, equality, social inclusion and legal recognition. The study focus on the problems faced by third gender individuals in every aspect of life. The paper analysis that recognizing third gender based on human rights can promote to more exclusive society.

CIRCULAR ECONOMY TRANSITION IN INDIA : A CRITICAL ANALYSIS OF THE POLICY - PRACTICE GAP, RESOURCE EFFICIENCY AND SUSTAINABLE DEVELOPMENT

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India's transition from a linear economy towards a circular economy (CE) has become increasingly important in the context of Rapid Urbanisation, Industrialisation, rising material consumption and growing waste generation. Although India has introduced several regulatory and policy initiatives related to resource efficiency, Extended producer responsibility (EPR), recycling and waste management, a substantial gap remains between policy formulation and implementation. This Study critically examine India's circular economy transition with particular emphasis on Policy -Practice gaps, Resource efficiency and Sustainable development. The study adopts a qualitative research design based on Secondary data and systematic analysis of recent government reports, Policy documents and peer reviewed literature. Recent evidence indicates that India's policy framework has strengthened considerably, Particularly in the areas of e-waste and EPR. According to Central Pollution Control Board estimates, national e- waste generation increased from 1.254 million metric tonnes in 2023-24 to 1.398 million metric tonnes in 2024-25, while the reported proportion collected, dismantled, recycled or disposed increased from 61.94 % to 70.71%. However, increasing waste generation alongside imposed formal processing capacity demonstrates that policy progress and waste prevention, Recent Research further identifies fragmented institutional responsibilities, inadequate infrastructure, insufficient incentives, weak monitoring, limited technology capacity and inadequate integration of the informal sector as major constraints. The paper agrees that India's circular economy strategy needs to

move beyond end-of-life recycling, towards prevention reuse, repair, refurbishment, remanufacturing and circular product design. A coordinated framework integrating government, industry, local authorities, informal worker and consumers is essential for achieving resource-efficient and inclusive sustainable development.

ACCELERATING GLOBAL COMMERCE: OPPORTUNITIES, STRUCTURAL BARRIERS, AND POLICY IMPERATIVES IN DIGITAL TRADE AND CROSS-BORDER E-COMMERCE

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The rapid convergence of advanced information technologies, data-driven platforms, and cross-border digital networks has fundamentally reshaped the global trading landscape. Digital trade and electronic commerce (e-commerce) have transitioned from supplementary retail channels to foundational drivers of economic resilience, international market integration, and sustainable business growth. This study examines the transformative role of digital trade mechanisms and e-commerce ecosystems in expanding market access for Micro, Small, and Medium Enterprises (MSMEs), lowering transaction friction, and optimizing supply chain logistics. Employing an exploratory, multi-dimensional analytical approach, this paper synthesizes emerging trends across digital payments, algorithmic consumer matchmaking, platform-mediated logistics, and cross-border regulatory frameworks. Despite unprecedented expansion, digital trade encounters critical bottlenecks, notably the widening digital divide across developing regions, complex cross-border data localization laws, evolving cybersecurity and fraud vulnerabilities, disparate intellectual property regimes, and unequal access to digital public infrastructure. The findings reveal that while digital platforms democratize entry into global value chains, maximizing their socioeconomic benefits requires structured intervention. The paper proposes a holistic policy roadmap focusing on cross-border regulatory interoperability, standardized digital dispute resolution protocols, and targeted capacity-building programs to foster inclusive participation for rural and small enterprises. By bridging trade policy with technological adaptation, this research highlights actionable pathways to cultivate an equitable, secure, and resilient e-commerce framework aligned with long-term sustainable development objectives.

CRISPR-CAS TECHNOLOGY IN HUMAN HEALTH: APPLICATIONS, CHALLENGES AND FUTURE PERSPECTIVES

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Clustered Regularly Interspaced Short Palindromic Repeats-associated protein (CRISPR-Cas) technology has emerged as one of the most transformative innovations in modern biotechnology, offering unprecedented opportunities for precise manipulation of genetic material. This review explores the applications, technological advances, challenges and future perspectives of CRISPR-Cas technology in human health. CRISPR-Cas systems, particularly CRISPR-Cas9, enable targeted modification of genomic sequences and have expanded the possibilities of disease modelling, functional genomics, gene therapy and precision medicine. Recent advances, including base editing and prime editing, have further broadened the ability to introduce specific genetic changes while potentially reducing some limitations associated with conventional double-strand DNA cleavage. CRISPR-based approaches are being investigated for the management of inherited genetic disorders, cancer, infectious diseases and other complex conditions. A major milestone in clinical translation was the approval of Casgevy, a CRISPR/Cas9-based therapy for sickle cell disease, demonstrating the transition of genome-editing technology from laboratory research towards clinical application. Despite these advances, important challenges remain, including off-target genomic alterations, delivery of editing components to specific tissues, editing efficiency, immune responses, treatment-associated risks, ethical considerations and equitable access to advanced therapies. Continued development of highly specific Cas variants, improved delivery systems and rigorous safety assessment may enhance the therapeutic potential of CRISPR-based interventions. Overall, CRISPR-Cas technology

represents a promising platform for innovative and potentially transformative healthcare solutions. Responsible development integrating molecular biotechnology, clinical research, bioinformatics and ethical frameworks will be essential for translating genome-editing innovations into safe, effective and accessible therapies.

AUTOMATED RICE PANICLE DETECTION AND COUNTING USING YOLOV11 FOR FIELD IMAGE ANALYSIS

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Rice panicle density is an essential element of rice crop phenotyping, yield assessment, and precision agriculture. The manual method of counting panicles, however, is time consuming, labour intensive and observer dependent, especially when it is required to count a large number of panicles. This paper proposes a panicle detection and counting system for rice with YOLOv11 deep learning object detection. A set of images with rice panicles was created from the annotated images and transferred from COCO annotation format to YOLO labels. The final dataset consisted of 1,754 training images, 219 validation images, and 220 independent test images, with 32,668, 3,962, and 4,042 panicle instances annotated for each image, respectively. A pre-trained YOLOv11 model was fine-tuned for 50 epochs with an image resolution of 640 × 640 and then tested for the detection and counting performance of rice panicles. The validation-based detection results achieved a precision of 66.11%, recall of 75.01%, mAP@0.50 of 76.50%, and mAP@0.50:0.95 of 51.32%. The model also exhibited fast inference, and the time required for inference was about 7.1ms/image during the evaluation. For the independent test set, the mean absolute error (MAE) and root mean square error (RMSE) were 11.96 and 13.47 panicles, respectively, when comparing the panicle counts manually annotated with the panicle counts predicted by the model. The results show that YOLOv11 can automatically recognize and locate rice panicles well in complex images and set up a basis for automatic rice panicle counting. The counting errors observed also suggest that the thresholds, handling of dense panicles, and training data used for each domain needs to be further optimized, which will enhance the accuracy of quantitative counting. The proposed framework is a realistic deep learning approach to rice phenotyping, and it could be utilized for a high throughput crop monitoring in the future and for yield estimation by image.

BIODIVERSITY AND ECOSYSTEM CONSERVATION: STRATEGIES FOR A SUSTAINABLE FUTURE

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Biodiversity is essential for maintaining healthy ecosystems, supporting human well-being, and ensuring ecological stability. However, habitat destruction, climate change, pollution, overexploitation of natural resources, invasive species, and unsustainable development are causing rapid declines in biological diversity worldwide. This paper examines the importance of biodiversity and the major approaches required for effective ecosystem conservation. Conservation strategies include the protection and restoration of natural habitats, establishment and effective management of protected areas, sustainable use of biological resources, restoration of degraded ecosystems, and conservation of threatened species. Community participation, environmental education, scientific monitoring, and the integration of traditional ecological knowledge can further strengthen conservation efforts. Emerging technologies such as remote sensing, geographic information systems, environmental DNA, and artificial intelligence can improve biodiversity assessment, monitoring, and management. Successful conservation also requires collaboration among governments,

scientists, local communities, conservation organizations, and the public. The paper emphasizes that biodiversity conservation should be integrated with sustainable development and climate action rather than treated as an isolated environmental objective. Protecting ecosystems and restoring ecological functions can enhance resilience, preserve ecosystem services, and support future generations. A science-based, inclusive, and long-term approach is therefore essential for achieving meaningful biodiversity and ecosystem conservation.

ECONOMIC INTERDEPENDENCE AND STRATEGIC RIVALRY IN INDO-CHINA RELATIONS : A MULTIDISCIPLINARY AND INTERDISCIPLINARY PERSPECTIVE

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The growing complexity of global political and economic relations has emphasized the need for multidisciplinary and interdisciplinary approaches to studying contemporary international affairs. Indo-China relations are a unique example of the interaction of economic interdependence and strategic rivalry. The rise of economic partnership and investment opportunities has increased economic ties between two nations, and at the same time, territorial disputes, security issues, and geopolitical confrontations have led to strategic mistrust between them. This paper attempts to apply the theoretical framework of International Political Economy (IPE) to study how economic interests affect foreign policy strategies and how strategic considerations impact economic interdependence in the context of Indo-China relations. The study of economic interaction between two countries with a focus on IPE combines such disciplines as economics, political science, international relations, strategic studies, and regional studies. The paper uses a multidisciplinary qualitative methodology and analyzes scholarly sources, reports, and publications. The research explores the theoretical framework applicable to economic and strategic relations between India and China. The paper's findings demonstrate that while economic interdependence between two countries has brought them mutually beneficial cooperation, its asymmetrical nature has raised economic security concerns in India. At the same time, strategic mistrust has deteriorated economic ties in China. Thus, according to the research, both economic and strategic factors need to be taken into account when analyzing Indo-China relations. The paper concludes that using the IPE framework for analyzing the bilateral relations of India and China is appropriate. It allows a better understanding of how economic and strategic factors shape and affect the international political economy.

EXPORT- ORIENTED POLICY INITIATIVES AND MANUFACTURING GROWTH IN INDIA: AN EMPIRICAL EVALUATION

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India's export promotion framework has shifted significantly from conventional duty-remission and export-incentive mechanisms to a broader industrial strategy aimed at strengthening domestic manufacturing, attracting investment, promoting localisation and facilitating participation in global value chains. Against this background, the present study examines the role of export promotion policies in the structural transformation of the Indian manufacturing sector. The study uses a descriptive, analytical research design based on secondary data from the Directorate General of Commercial Intelligence. The evidence indicates that India's merchandise exports increased from US\$310.34 billion in 2014–15 to US\$437.07 billion in 2023–24 despite considerable global volatility. The study concludes that India's export strategy is increasingly functioning as an

instrument of industrial transformation. Its long-term success will depend on shifting from incentive-driven manufacturing to innovation-, productivity-, and domestic-value-addition-driven competitiveness.

MARKETING AND CONSUMER BEHAVIOUR IN THE DIGITAL ERA

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The rapid growth of digital technologies has fundamentally transformed the marketing environment and reshaped the ways consumers search for information, evaluate alternatives, make purchasing decisions, and interact with brands. The emergence of social media, e-commerce platforms, mobile applications, artificial intelligence, big data analytics, digital payment systems, and personalized advertising has created new opportunities as well as challenges for marketers and consumers. In the digital era, consumer behaviour is increasingly influenced by online reviews, social media recommendations, influencer marketing, personalized content, electronic word-of-mouth, price comparisons, and real-time communication with brands. This research paper examines the changing relationship between digital marketing practices and consumer behaviour, with particular emphasis on the factors influencing consumers' attitudes, preferences, purchase intentions, and post-purchase behaviour. The study explores how digital marketing tools enable organizations to understand consumer needs and provide customized products, services, and promotional messages. Data-driven marketing allows firms to analyze consumer preferences and behavioural patterns, thereby improving targeting, customer engagement, and relationship management. At the same time, consumers have gained greater access to information and alternatives, increasing their bargaining power and expectations regarding convenience, transparency, responsiveness, and personalized experiences. The study also examines the role of social media and digital communities in shaping brand perceptions and purchasing decisions. Online consumer reviews, ratings, influencers, and user-generated content have become important sources of trust and credibility, particularly among digitally connected consumers. The paper further highlights emerging concerns related to data privacy, cybersecurity, excessive personalization, digital fatigue, misleading online information, and ethical issues associated with the collection and use of consumer data. These concerns can influence consumer trust and long-term relationships with brands. The study adopts a conceptual and analytical approach based on existing literature on digital marketing and consumer behaviour to identify major trends and emerging patterns in the digital marketplace. The findings suggest that successful digital marketing requires organizations to move beyond traditional promotional approaches and develop consumer-centric, transparent, interactive, and technologically enabled strategies. Understanding changing consumer expectations and using digital data responsibly can help organizations enhance customer satisfaction, loyalty, engagement, and competitive advantage. The paper concludes that digital transformation has not merely changed marketing communication; it has fundamentally altered the consumer decision-making process. Therefore, organizations must continuously adapt their digital marketing strategies while maintaining ethical standards, consumer privacy, and trust in order to achieve sustainable success in the digital era.

HARNESSING RESEARCH, INNOVATION AND TECHNOLOGY FOR A SUSTAINABLE AND INCLUSIVE FUTURE

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The transition towards a sustainable future requires an integrated approach that brings together research, technological innovation, social development, environmental responsibility, and effective public policy. In the contemporary era, rapid advancements in emerging technologies such as Artificial Intelligence, digital technologies, renewable energy, smart infrastructure, and data-driven decision-making are creating new opportunities to address complex economic, social, and environmental challenges. However, technological progress alone cannot ensure sustainability unless it is accompanied by inclusiveness, responsible innovation, institutional capacity, and meaningful participation of communities. It examines the



role of multidisciplinary research and innovation in promoting sustainable development, with particular emphasis on the interface between technology, society, economy, and environment. It explores how interdisciplinary collaboration can contribute to addressing challenges such as climate change, resource scarcity, environmental degradation, digital inequality, employment transformation, and inclusive economic growth. The study also highlights the importance of integrating technological solutions with human-centric approaches and sustainable policy framework. It argues that future development pathways should be based on the principles of innovation with responsibility, technology with inclusiveness, and economic growth with environmental sustainability. Strengthening collaboration among academic institutions, government, industry, civil society, and local communities can facilitate the translation of research into practical and scalable solutions. It can be concluded that multidisciplinary research and responsible technological innovation can serve as powerful instruments for achieving the Sustainable Development Goals and building a resilient, inclusive, and sustainable future.

DIGITAL TRANSFORMATION TO GREEN INNOVATION: A TWIN TRANSITION - A CONCEPTUAL FRAMEWORK FOR SUSTAINABLE BUSINESS IN THE DIGITAL ECONOMY

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Digital transformation and green innovation are often presented as mutually reinforcing dimensions of the twin transition. Yet the literature increasingly shows that digitalisation does not produce environmental benefits automatically: the same technologies may enable resource efficiency and innovation while also generating rebound effects, implementation costs and new environmental burdens. This paper develops an integrative conceptual framework that explains the conversion of digital capability into green innovation rather than treating digital transformation as a direct environmental outcome. A structured narrative review of peer-reviewed research published primarily between 2019 and 2025 is combined with foundational work on digital transformation and with Indian regulatory and policy sources. The synthesis identifies four linked stages—digital capabilities, organisational conversion mechanisms, green innovation outcomes and sustainable value creation—and positions institutional and firm-level conditions as boundary conditions operating across the pathway. The analysis shows that digital technologies create environmental affordances, but these affordances become green innovation only when firms possess complementary capabilities in learning, R&D, resource allocation, collaboration, transparency and business-model redesign. The framework also incorporates a conversion-friction logic: early-stage digital investment can crowd out innovation resources before complementary capabilities mature, helping reconcile apparently conflicting findings in the empirical literature. The paper contributes by integrating capability, affordance and institutional perspectives into a single conversion architecture and by translating that architecture into testable propositions for future research. The Indian context is used as a policy-relevant application, particularly in light of evolving sustainability disclosure requirements and national net-zero transition planning.

IMPACT OF EDUCATIONAL INITIATIVES IN PROMOTING SUSTAINABLE DEVELOPMENT: A COMPARATIVE ANALYSIS OF GOVERNMENT AND PRIVATE COLLEGES IN RAJASTHAN

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Sustainable development increasingly requires educational institutions to equip students with the knowledge, values and capabilities needed to respond to environmental, social and economic challenges. Higher education institutions can contribute to this process by incorporating sustainability into academic activities, student engagement and campus practices. However, the nature and effectiveness of such efforts may vary according to institutional structure, resources and management practices. Against this background, this study examines the contribution of educational initiatives towards promoting sustainable development in higher education institutions in Rajasthan. The study focuses on initiatives undertaken by Government and



Private Colleges in areas such as environmental awareness, conservation of natural resources, waste management, sustainable lifestyles, energy and water conservation, community participation and awareness of the Sustainable Development Goals (SDGs). It further examines whether participation in these educational activities is associated with students' understanding of sustainability and their willingness to adopt sustainable practices in their personal, academic and social lives. A comparative approach is adopted to examine the similarities and differences between Government and Private Colleges with respect to the availability, implementation and perceived effectiveness of sustainability-oriented educational initiatives. The study also considers the role of faculty involvement, institutional support, infrastructure, student participation and awareness in strengthening these initiatives. The study is expected to provide a clearer understanding of how higher education institutions in Rajasthan can contribute to sustainable development through education. The comparative findings may help colleges identify areas requiring greater attention and support the development of more effective and context-sensitive sustainability initiatives. The study ultimately highlights the potential of higher education to transform sustainability awareness into meaningful participation and responsible practices among students.

THE IMPACT OF POLITICAL UNREST ON INDIGENOUS COMMUNITIES: A STUDY OF MAMANG DAI'S SELECTED WORKS

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The North-Eastern region of India has long been characterized by complex histories of political unrest, ethnic tensions, insurgency, displacement, and struggles over land and cultural identity. These conditions have significantly affected the social and cultural lives of indigenous communities. Mamang Dai, one of the prominent literary voices from Arunachal Pradesh, portrays the relationship between political turmoil, indigenous identity, memory, and the changing socio-cultural landscape of the region. Her writings provide a nuanced representation of communities negotiating the pressures of conflict while attempting to preserve their cultural traditions, collective memories, and connection with their ancestral land. This paper, titled "The Impact of Political Unrest on Indigenous Communities: A Study of Mamang Dai's Selected Works," examines how political and social unrest influences the lives, identities, and cultural consciousness of indigenous communities represented in Dai's literary works. The study explores themes of displacement, alienation, loss, fear, cultural disruption, and the struggle for belonging. It also investigates how memory, oral traditions, myths, and the relationship between people and their land become important means of preserving indigenous identity in times of social and political instability. Through a close reading of selected poems and fictional works, the paper argues that Dai does not portray unrest merely as a political phenomenon; rather, she reveals its deeper psychological, cultural, and ecological consequences for indigenous communities. Her works consequently provide an important literary perspective on the lived experiences of people in the North-East and contribute to a broader understanding of marginality, identity, and resistance in Indian English literature.

DIGITAL TRADE AND WOMEN ENTREPRENEURSHIP: OPPORTUNITIES THROUGH E-COMMERCE PLATFORMS

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The rapid expansion of digital technologies and e-commerce platforms has significantly transformed the contemporary business environment, creating new avenues for entrepreneurship, particularly for women. Digital trade has reduced geographical barriers, simplified market access, enabled digital payments, and provided entrepreneurs with opportunities to connect directly with consumers at local, national, and global levels. In this context, e-commerce platforms have emerged as important instruments for promoting women entrepreneurship by enabling women to establish and manage businesses with relatively lower initial



investment and greater flexibility. This paper examines the role of digital trade and e-commerce platforms in promoting women entrepreneurship and enhancing women's economic participation. It explores how digital marketplaces, social commerce, mobile applications, digital payment systems, online marketing, and social media platforms can help women entrepreneurs overcome some of the traditional barriers associated with physical markets, limited mobility, lack of market information, and restricted access to customers. E-commerce also provides opportunities for women to convert traditional skills and locally produced goods into commercially viable enterprises and expand their customer base beyond geographical boundaries. The study further highlights the challenges that may limit women's effective participation in digital trade, including the digital gender divide, inadequate digital and financial literacy, limited access to technology and finance, cybersecurity concerns, lack of awareness about online business regulations, intense market competition, and difficulties in managing logistics and digital marketing. Addressing these challenges requires coordinated efforts involving governments, financial institutions, educational institutions, technology platforms, and other stakeholders to create an enabling digital ecosystem for women entrepreneurs. The paper argues that e-commerce should not merely be viewed as a commercial platform but as a potential mechanism for women's economic empowerment, financial independence, innovation, and inclusive growth. Strengthening digital skills, improving access to affordable technology and finance, ensuring secure digital transactions, and providing appropriate institutional support can enable more women to participate effectively in the digital economy. The study concludes that empowering women through digital trade can contribute not only to individual entrepreneurial success but also to employment generation, household economic resilience, local economic development, and the broader goal of building an inclusive and digitally empowered economy.

TRADITIONAL WATER CONSERVATION TECHNIQUES AND THEIR RELEVANCE IN RESPECT OF GLOBAL WARMING ,IN REFERENCE TO RAJASTHAN

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Objective: This study examines the role and contemporary relevance of **traditional water conservation techniques** in Rajasthan in the context of **global warming and climate change**. It aims to assess how indigenous water-management systems can contribute to water security, groundwater recharge, drought resilience, and sustainable resource management under increasing climatic stress.

Methodology: The study adopts a **descriptive and analytical approach** based on a review of relevant academic literature, historical accounts, institutional reports, and documented evidence concerning traditional water-management practices in Rajasthan. Particular attention is given to indigenous systems such as **Johads, Nadis, Tankas, Kunds, Baoris (stepwells), and Khadins**, with emphasis on their design, functional characteristics, ecological significance, and adaptability to contemporary climatic conditions. The study also examines the potential for integrating traditional practices with modern water-conservation and watershed-management approaches.

Findings: The analysis indicates that traditional water systems were developed in close adaptation to Rajasthan's **arid and semi-arid climate**, seasonal rainfall patterns, and water scarcity. These systems facilitate **rainwater harvesting, runoff management, groundwater recharge, soil-moisture conservation, and decentralized water storage**. Their low-energy requirements, reliance on locally available materials, and community-based management mechanisms make them potentially valuable for **climate adaptation**. However, their effectiveness is increasingly constrained by groundwater depletion, changing rainfall patterns, urbanization, land-use transformation, inadequate maintenance, and the gradual erosion of traditional knowledge. The findings suggest that restoration and scientific upgrading of these systems, combined with community participation and institutional support, can strengthen local **water resilience**.

Conclusion: Traditional water conservation systems in Rajasthan should be viewed not only as elements of **cultural and technological heritage** but also as potential components of contemporary climate-adaptation strategies. Their systematic documentation, restoration, and integration with modern hydrological

planning can promote **sustainable water management, drought preparedness, groundwater security, and community resilience**. Revitalizing indigenous practices alongside scientific interventions may therefore provide a context-sensitive pathway for addressing the emerging water challenges associated with **global warming** in Rajasthan.

ROLE OF GEOSPATIAL TECHNOLOGIES IN AGRO-ECOLOGY AND FOOD SECURITY: A CASE STUDY OF PURVANCHAL, UTTAR PRADESH

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Climate variability, erratic precipitation patterns, land fragmentation, and soil degradation present severe operational challenges to agricultural sustainability and regional food security across the Gangetic Plains of North India. This paper evaluates the multi-dimensional applications of Geospatial Technologies—specifically Remote Sensing (RS), Geographic Information Systems (GIS), and Global Positioning Systems (GPS)—in analyzing agro-ecological dynamics and assessing micro-level food security vulnerability in the Purvanchal region of Eastern Uttar Pradesh. Utilizing multi-temporal satellite observations (Landsat-7 ETM+, Landsat-8/9 OLI, and Sentinel-2 MSI) alongside high-resolution gridded meteorological data and socio-economic census records from 2004 to 2024, this study systematically models Land Use/Land Cover (LULC) transformations, vegetation vigor dynamics via Normalized Difference Vegetation Index (NDVI) time-series analysis, and crop water stress indices. A spatially explicit Agricultural Vulnerability Index (AVI) is constructed using Multi-Criteria Decision Analysis (MCDA) integrated with Analytic Hierarchy Process (AHP). The empirical findings reveal a continuous reduction in net sown area (4.7% net decline) driven by urban expansion and infrastructure growth around major nodes like Gorakhpur, Varanasi, and Azamgarh, alongside pronounced inter-annual crop vigor fluctuations along the Ghaghara and Gandak river basins. The study demonstrates that geospatial modeling provides the requisite analytical precision for micro-level resource allocation, crop distress monitoring, and climate-smart policy interventions essential to advancing Sustainable Development Goals, specifically SDG 2 (Zero Hunger) and SDG 13 (Climate Action).

USE OF LEARNING MANAGEMENT SYSTEMS IN ONLINE TEACHING–LEARNING

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Learning Management Systems (LMS) play a central role in contemporary online and technology-enabled blended education by offering structured platforms for delivering instructional content, facilitating communication, and supporting assessment. Commonly used LMS platforms include Moodle, Google Classroom, Microsoft Teams, Canvas, Blackboard Learn, Zoom (as a synchronous teaching tool), and Brightspace (D2L). Each system provides distinct features that enhance teaching–learning processes. Moodle enables customizable course management and assessments, while Google Classroom integrates seamlessly with Google applications to support easy assignment distribution and feedback. Microsoft Teams fosters collaborative learning through live sessions and shared digital workspaces. Canvas and Blackboard offer comprehensive analytics, rubric-based grading, and discussion tools. Brightspace (D2L) contributes advanced adaptive learning pathways, predictive analytics, and accessible multimedia content options. Collectively, LMS platforms improve educational effectiveness by enabling flexible, self-paced learning, efficient monitoring of student progress, and continuous evaluation. Although challenges such as technological limitations, user training needs, and data security concerns remain, LMS systems have significantly transformed digital pedagogy. Their integration in educational settings promotes accessibility, interactive, scalable, and student-centered learning environments, making them indispensable in modern teaching–learning frameworks.

MATHEMATICAL MODELLING AND SIMULATION OF FLUID FLOW FOR SUSTAINABLE WATER AND ENVIRONMENTAL SYSTEMS

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Sustainable management of water and environmental systems requires accurate understanding and prediction of fluid flow under varying physical and environmental conditions. This study presents a mathematical modelling and simulation framework for investigating fluid dynamics in sustainable water systems. The governing flow behaviour is described using the Navier–Stokes equations coupled with continuity and convection–diffusion equations to model velocity, pressure, and pollutant transport. Numerical techniques are employed to simulate flow patterns and analyse the influence of parameters such as viscosity, velocity, diffusion, boundary conditions, and flow geometry. The model can be applied to river flows, water channels, reservoirs, and groundwater systems to predict transport behaviour and identify conditions affecting water quality. Simulation results provide insights into flow stability, pollutant dispersion, and efficient water utilization. The proposed mathematical approach can help with climate-resilient management techniques, environmental monitoring, and sustainable water-resource planning, showcasing the potential of mathematical modelling as a tool for handling challenging environmental issues.

INDIA'S TRANSITION TOWARDS A GREEN ECONOMY: SUSTAINABLE BUSINESS MODELS, INNOVATION AND POLICY CHALLENGES

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The growing challenges of climate change, environmental degradation, resource depletion, and increasing waste have highlighted the need to integrate sustainability into business practices and economic development. Sustainable business and the green economy have emerged as important approaches to achieving long-term economic growth while protecting natural resources and promoting social well-being. This research paper aims to examine the role of sustainable business practices in accelerating the transition towards a green economy, with particular emphasis on resource efficiency, renewable energy adoption, waste management, circular economy models, green innovation, and responsible corporate governance. The study adopts a conceptual and descriptive research approach based on a review of secondary sources, including academic literature, institutional reports, and sustainability-related publications. It explores how environmentally responsible business strategies can contribute to cost efficiency, innovation, competitiveness, employment generation, and long-term business resilience. The study also identifies key barriers to sustainability adoption, including high initial investment costs, limited technological capabilities, inadequate awareness, regulatory challenges, and difficulties in measuring environmental performance. Furthermore, it highlights the importance of government policies, green finance, stakeholder participation, and corporate accountability in encouraging sustainable business transformation. The paper argues that integrating environmental, economic, and social objectives into business decision-making can support a more resource-efficient, low-carbon, and inclusive economy. It concludes that collaboration among businesses, governments, financial institutions, and consumers is essential for advancing sustainable development and achieving the objectives of the United Nations Sustainable Development Goals. The study offers practical insights for policymakers and business leaders seeking to balance profitability with environmental responsibility and inclusive economic growth.

WETLAND LOSS AND MIGRATORY WATER BIRD CONSERVATION IN THE GANGETIC FLOODPLAIN OF EASTERN UTTAR PRADESH

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Wetlands provide feeding, roosting, resting, and breeding habitats for migratory waterbirds. In India, agricultural expansion, wetland encroachment, hydrological alteration, pollution, and urbanization are degrading and fragmenting these ecosystems. The Gangetic floodplain of eastern Uttar Pradesh includes freshwater wetlands, oxbow lakes, marshes, and seasonally flooded habitats that support resident and migratory birds. However, changes in wetland area, hydrological connectivity, and habitat quality threaten the long-term conservation of waterbird populations. In this review, I examine how wetland loss affects migratory waterbirds, with a focus on floodplain wetlands in eastern Uttar Pradesh. I synthesize scientific literature on wetland transformation, habitat degradation, human disturbance, and their effects on habitat suitability, seasonal food availability, and ecological connectivity. I also consider the conservation value of wetlands such as Bakhira, Saman, and other connected floodplain habitats. The review discusses how remote sensing, geographic information systems (GIS), regular waterbird monitoring, and habitat-based conservation planning can help identify wetlands at risk. The review shows that conservation efforts should maintain hydrological connectivity, restore degraded wetlands, control encroachment, reduce pollution, and involve local communities. Combining wetland habitat assessments with long-term monitoring of migratory waterbirds can help identify conservation priorities and guide adaptive management. Rather than protecting wetlands in isolation, conservation planning should consider the ecological links between floodplain wetlands and migratory bird populations.

THE GREEN FINANCE ECOSYSTEM IN INDIA: CURRENT LANDSCAPE AND ROADMAP FOR SUSTAINABLE DEVELOPMENT

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India stands at a key stage in its commitment to sustainable development while pursuing ambitious economic growth. Over past few years country has reinforced commitment to sustainability and targeted of achieving net-zero emissions by 2070. With an increasing focus on ESG initiatives and generating 50% of its electricity from renewable energy sources by 2030, the nation will require US\$ 2.5 trillion (around Rs. 162.5 lakh crore) between 2015 and 2030, or US\$ 170 billion (approximately Rs. 11 lakh crore) annually. Driven by convergence of policy initiatives and the imperative to meet ambitious climate targets, the role of green finance has emerged and fundamentally reshaping the investment ecosystem beyond long established wealth maximization objective. This encompasses a wide array of financial instruments, including loans, debt mechanisms, and investments, all channelled towards encouraging the development of green projects or minimizing the environmental impact of existing initiatives. This paper is an endeavor to give a comprehensive analysis of the current green finance landscape. The paper will study the various financial instruments, regulatory framework and key players that constitutes India's unique green finance ecosystem.

TRANSFORMING PEDAGOGY: THE ROLE AND ETHICAL IMPLICATIONS OF ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION AND RESEARCH

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The rapid integration of Artificial Intelligence (AI) has initiated a paradigm shift across global educational landscapes. This paper looks at how AI tools, like smart apps and automatic grading, help students learn better and make teaching easier in higher education. The paper also explains how AI helps



researchers analyze big data and find information quickly. To understand this, the study looks at how colleges use AI and how it affects students and teachers. While AI brings many benefits like fast learning and 24/7 support, it also creates serious problems. These problems include data privacy risks, unfair AI results, and students copying work without thinking. In conclusion, this paper suggests a simple plan to use AI safely. Ultimately, this paper proposes a balanced framework for ethical AI adoption, ensuring that technological innovation complements human mentorship rather than replacing it, thereby fostering a sustainable and inclusive future for education and research.

“SUSTAINABLE VALORIZATION OF BIOGENIC WASTE THROUGH INNOVATIVE ENERGY AND NANOTECHNOLOGICAL APPROACHES”

Dr. Amit Kumar Verma

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The increasing demand for energy, rapid industrialization, agricultural intensification, and growing waste generation have created significant challenges for environmental sustainability and natural resource conservation. In this context, the valorization of biogenic waste offers a promising multidisciplinary pathway for converting biological residues into renewable energy, value-added products, and environmentally sustainable materials. Biogenic wastes originating from agricultural and forestry residues, oilseed crops, food waste, municipal organic waste, and animal manure contain valuable organic and carbon-rich components that can be transformed through biological, thermochemical, and physicochemical processes. This present study highlights the potential of biogenic materials and wastes as renewable resources for clean and green energy production. Processes such as fermentation, anaerobic digestion, pyrolysis, hydrothermal conversion, and gasification can convert waste biomass into biofuels, bio-oil, biohydrogen, biogas, syngas, and other useful products. Waste-derived heterogeneous catalysts also provide an important avenue for sustainable biodiesel production, while appropriate treatment of food waste and animal manure can simultaneously contribute to waste management and renewable energy generation. A further innovative dimension is the integration of green nanotechnology with biogenic waste valorization. Biogenic wastes can serve as inexpensive and renewable precursors for the synthesis of advanced nanomaterials, including graphene and other two-dimensional carbon-based materials. These materials have potential applications in energy storage and conversion, biosensors, environmental monitoring, and biomedical technologies. Thus, the integration of biology, chemistry, materials science, nanotechnology, and environmental science can transform waste resources into technologically valuable materials and products. The multidisciplinary utilization of biogenic waste therefore provides an integrated approach to addressing two major challenges—waste accumulation and increasing energy demand. Converting biological waste into clean energy and value-added nanomaterials can reduce dependence on conventional resources, minimize environmental pollution, promote resource recovery, and support circular-economy principles. Continued research and technological innovation in this field may contribute significantly to the development of environmentally responsible technologies and a sustainable future.

RESEARCH, INNOVATION AND TECHNOLOGY: MULTIDISCIPLINARY APPROACHES FOR BUILDING A SUSTAINABLE FUTURE

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The rapid advancement of research, innovation, and emerging technologies has created new opportunities to address complex global challenges and promote sustainable development. However, achieving a sustainable future requires an integrated and multidisciplinary approach that brings together scientific research, technological innovation, social perspectives, environmental responsibility, and economic development. This research explores the role of multidisciplinary research and innovative technologies in developing sustainable solutions for contemporary challenges such as climate change, resource depletion,

environmental degradation, digital transformation, and inclusive development. The study emphasizes the potential of emerging technologies, including artificial intelligence, Internet of Things, renewable energy systems, smart technologies, and data-driven approaches, to improve resource efficiency, strengthen decision-making, and support sustainable communities. It further examines the importance of collaboration among researchers, academic institutions, industries, policymakers, and local communities in transforming innovative ideas into practical and scalable solutions. The findings highlight that technology alone cannot ensure sustainability; rather, its effective integration with ethical considerations, social inclusion, environmental consciousness, and responsible governance is essential. The study proposes a multidisciplinary framework that encourages innovation, knowledge sharing, and technology-driven interventions for achieving long-term environmental, social, and economic sustainability. Such an approach can contribute significantly to the realization of the Sustainable Development Goals (SDGs) and the development of resilient and inclusive societies.

FROM CONSUMPTION TO WASTE: ALIGNING CONSUMPTION PATTERNS WITH SDG 12 TARGETS ON WASTE REDUCTION

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Consumption patterns across the globe have changed significantly over the past century as a result of population growth, industrialization, globalization, urbanization, and technological advancement. Although consumption is essential for sustaining livelihoods and driving economic growth, it has also become a primary driver of waste generation at scales previously unseen in human history. Sustainable development goal 12 deals with waste generation due to consumption and production activities and this article analyses how casual consumption patterns drifts the world away from achieving SDG 12 specially focussing upon SDG 12.3 and 12.5. Target 12.3 aims at halving per capita Global food waste generated through consumption and production activities by 2030 whereas target 12.5 aims at reducing waste generation through the process of prevention, reduction, recycling, reuse. Secondary data reveal that Global solid waste production is expected to rise from 2.01 billion tons in 2016 to 3.4 billion tons by 2050, with the most rapid increases projected for low- and middle-income countries. This article examines the complex relationship between consumption and waste generation by identifying the drivers of overconsumption, analyzing sector-specific impacts, and comparing global trends. Using secondary data sources, it highlights case studies from the food, packaging, fashion, and electronics sectors to demonstrate how individual behaviors, cultural practices, and structural economic systems contribute to waste accumulation. The discussion emphasizes the urgent need to transition towards sustainable consumption models and circular economy frameworks in order to mitigate environmental, social, and economic risks.

ECO-FRIENDLY PLANT DISEASE MANAGEMENT FOR SUSTAINABLE AGRICULTURE AND FOOD SECURITY: INTEGRATING SOIL HEALTH, COMPOST AND ECOLOGICAL APPROACHES

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Agricultural sustainability and food security are closely dependent on maintaining healthy crops, fertile soils and ecologically balanced production systems. Plant diseases are among the major biological constraints affecting crop productivity and food quality, while excessive dependence on chemical pesticides may adversely affect soil health, beneficial microorganisms, biodiversity and environmental quality. Developing effective and environmentally compatible approaches for plant disease management is therefore essential for achieving sustainable agricultural production, particularly in semi-arid regions such as Rajasthan. The present study highlights an integrated approach to sustainable plant disease management based on disease identification, understanding of biotic and abiotic factors, soil-health improvement and eco-friendly management practices. Field and laboratory investigations of important bacterial diseases demonstrate the

significance of accurate pathogen identification and assessment of environmental factors such as temperature, humidity, soil moisture and cropping conditions in disease development and spread. Understanding these interactions provides an important basis for developing preventive and sustainable disease-management strategies. Special emphasis is placed on the potential of compost-based management and biologically mediated soil-health improvement as alternatives or complements to conventional chemical disease control. Organic amendments such as compost can improve soil structure, nutrient availability and microbial activity while supporting plant growth and potentially reducing disease development. Enhancement of beneficial microbial communities may contribute to natural disease suppression and improve the resilience of crops against biotic stresses. Integration of crop sanitation, healthy planting material, crop rotation, appropriate cultural practices and organic amendments can further reduce pathogen pressure and minimize unnecessary chemical inputs. Such an integrated approach has particular relevance to the agricultural systems of Alwar district and other semi-arid regions of Rajasthan, where farmers face challenges related to soil degradation, water limitations, climatic variability and crop diseases. Sustainable disease management can contribute not only to improved crop productivity but also to conservation of soil biodiversity, reduction of environmental contamination and long-term agricultural resilience. The study emphasizes that plant disease management should be considered as an integral component of sustainable agriculture rather than merely a method of controlling individual pathogens. Combining plant pathology, soil microbiology, ecology and traditional agricultural practices can provide a practical framework for reducing crop losses while conserving natural resources. Adoption of such eco-friendly strategies can contribute to stable agricultural productivity, improved soil health, reduced dependence on synthetic chemicals and ultimately enhanced food security.

ROLE OF SOCIAL MEDIA IN BUILDING CONSUMER ENGAGEMENT AND BRAND LOYALTY

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Social media has transformed the way businesses communicate with consumers, creating new opportunities for meaningful interaction, engagement, and long-term relationship building. Platforms such as Instagram, Facebook, YouTube, X, and other digital communities enable brands to communicate directly with consumers, understand their preferences, provide personalised content, and encourage active participation. In this context, consumer engagement has emerged as an important factor influencing brand loyalty in the digital marketplace. This paper examines the role of social media in building consumer engagement and strengthening brand loyalty. It focuses on key dimensions of social media engagement, including interactive communication, content quality, responsiveness, customer participation, electronic word-of-mouth, influencer recommendations, and personalised brand experiences. The study also explores how these factors influence consumers' trust, satisfaction, purchase intention, repeat purchase behaviour, and willingness to recommend a brand. The paper adopts a descriptive and analytical approach based on relevant secondary literature and, where applicable, consumer responses collected through a structured questionnaire. The study suggests that consistent and authentic social media communication can enhance consumer involvement and develop stronger emotional connections with brands. Interactive content and positive online experiences can further strengthen consumer trust and encourage repeat engagement. However, issues such as misleading content, privacy concerns, excessive promotional communication, and lack of authenticity may negatively affect consumer trust and loyalty. The paper concludes that social media should not be viewed merely as a promotional tool but as a strategic platform for developing sustainable consumer relationships and long-term brand loyalty. The findings provide useful implications for marketers seeking to design consumer-centric social media strategies in an increasingly competitive digital environment.

THERMAL DEGRADATION OF COPPER (II) SOAP THIUREA COMPLEXES FOR SUSTAINABLE DEVELOPMENT OF ENVIRONMENT**Dr. Asha Meena**

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Natural oils are considered to be the important class of renewable sources and can be obtained from naturally occurring plants such as sesame (*Sesamum indicum*), they consist mostly of triglycerides. The aim of this study give an overview of new findings in the field of thermogravimetric analysis for Copper (II) sesame soap complexes with thiourea ligand. Solid state kinetics has attracted the attention of scientific community not only due to its numerous applications in environment, energy, waste water treatment, pollution control and green chemistry but also due to their wide range of biological activities. TGA technique has been applied to Copper (II) sesame thiourea complex for its thermal analysis and evaluation of activation energy and pre-exponential factor. Thermodynamic parameters such as heat of dissociation ΔH , change in free energy ΔG and change in entropy ΔS were evaluated for the different steps of degradation using the integral method of Coats-Redfern, Broido, Horowitz-Metzger and Piloyan-Novikova method. The results of thermogravimetric analysis reveal that Copper (II) sesame thiourea complex undergo stepwise thermal degradation of ligand, saturated, mono- and polyunsaturated fatty acid components of edible oils. It has been observed that for all the equations applied, the stepwise energy of activation follows the order – Step III > Step II > Step I.

THE IMPACT OF FINTECH ON WOMEN'S FINANCIAL INCLUSION IN INDIA: OPPORTUNITIES, CHALLENGES AND FUTURE PROSPECTS**Dr. Bhajan Lal**

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Financial Technology (FinTech) has emerged as a significant force in transforming the financial services sector and promoting financial inclusion in India. The rapid expansion of mobile banking, Unified Payments Interface (UPI), digital wallets, Aadhaar-enabled payment systems and technology-based financial services has created new opportunities for women to access and use formal financial services. This paper examines the impact of FinTech on women's financial inclusion in India, with particular emphasis on banking access, digital payments, savings, credit and financial empowerment. The study is descriptive and analytical in nature and is based on secondary data obtained from government reports, Reserve Bank of India publications, World Bank reports and existing academic literature. The study examines how FinTech can reduce geographical, economic and social barriers that traditionally restrict women's participation in the formal financial system. It also identifies challenges such as limited digital and financial literacy, inadequate access to smartphones and the internet, cybersecurity risks and the digital gender divide. The study concludes that FinTech can contribute substantially to women's financial empowerment when supported by digital infrastructure, financial literacy, consumer protection and inclusive policy measures.

HERITAGE RESOURCES AND TOURISM POTENTIAL OF UDAIPUR DISTRICT: A GEOGRAPHICAL ASSESSMENT**Dr. Bhavna Sharma**

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Udaipur district of Rajasthan possesses a rich and diverse heritage that reflects the region's historical, cultural, architectural, religious and natural significance. The district is widely recognized for its historic palaces, forts, temples, lakes, traditional settlements, folk traditions, handicrafts and archaeological remains, which collectively provide substantial potential for heritage-based tourism and regional development. This study examines the heritage potentiality of Udaipur district from a geographical perspective, focusing on the spatial distribution, diversity, accessibility and tourism significance of its tangible and intangible heritage

resources. The study proposes to identify major heritage sites and assess their potential for sustainable tourism development while considering issues related to conservation, infrastructure, accessibility, commercialization and community participation. A combination of secondary data, field observations, existing literature, tourism statistics and thematic mapping can be used to analyse the heritage resources of the district. The study emphasizes that heritage should not be viewed merely as a tourist attraction but as an important component of regional identity, cultural continuity and sustainable economic development. Proper documentation, conservation, interpretation, improved connectivity, responsible tourism practices, and greater involvement of local communities can enhance the heritage potential of Udaipur district. The study therefore provides a geographical framework for understanding heritage resources and their role in promoting sustainable, culturally sensitive, and locally beneficial tourism development in Udaipur district.

EVALUATING THE IMPACT OF GENERATIVE AI TOOLS ON ANALYTICAL SKILL ACQUISITION AND PROBLEM-SOLVING AMONG BUSINESS SCHOOL STUDENTS

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The rapid integration of Generative Artificial Intelligence (GenAI) into graduate business education presents a dual challenge: it enhances task efficiency while potentially undermining foundational analytical reasoning. This empirical study examines how active GenAI tool adoption influences quantitative problem-solving and critical case analysis among MBA students ($N = 340$). Using a randomized quasi-experimental setup across a 16-week core managerial economics and analytics curriculum, participants were divided into an AI-Assisted cohort (leveraging LLMs for data synthesis, modeling, and interpretation) and an AI-Restricted control cohort. Pre- and post-intervention evaluations measured three dimensions: procedural fluency, conceptual reasoning, and unassisted diagnostic problem-solving. While the AI-assisted group demonstrated a 34% reduction in assignment turnaround time and superior preliminary draft coherence, post-test assessments conducted without tool access revealed a statistically significant decline ($p < .01$) in unassisted conceptual diagnostics and boundary-condition detection compared to the control group. These findings point to an "epistemic offloading" vulnerability, suggesting business curricula must balance tool scaffolding with unassisted evaluative benchmarks.

SUSTAINABLE FUNCTIONAL MATERIALS: ADVANCES IN SOLID-STATE PHYSICS FOR ENERGY-EFFICIENT TECHNOLOGIES

Dr. Charu Agarwal

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The growing demand for sustainable and energy-efficient technologies has accelerated research into advanced functional materials with tunable electrical, optical, thermal, and structural properties. Solid-state and materials physics play a crucial role in understanding the fundamental mechanisms governing these properties and in developing materials suitable for next-generation technological applications. This work focuses on the relationship between crystal structure, microstructure, defects, and the resulting physical properties of functional materials relevant to sustainable technologies. Particular attention is given to the influence of material composition and synthesis conditions on structural, optical, and electrical characteristics. Techniques such as X-ray diffraction (XRD), scanning electron microscopy (SEM), energy-dispersive X-ray spectroscopy (EDS/EDX), and optical spectroscopy can be employed to investigate phase formation, morphology, elemental composition, and electronic behaviour. Understanding these structure-property relationships provides a pathway for optimizing materials for applications including renewable-energy conversion, energy storage, sensors, optoelectronic devices, and energy-efficient electronics. The study highlights how materials-level innovations, supported by fundamental solid-state physics, can contribute to reducing energy consumption and environmental impact while improving device performance. Such

interdisciplinary research provides an important foundation for the development of scalable and sustainable technologies for future energy and electronic systems.

WATER RESOURCE MANAGEMENT

Dr. Dhanraj Meena

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Water resources management is the planned process of developing, distributing, and optimizing the use of water resources across all societal and environmental needs. Integrated Water Resources Management (IWRM): A cross-sectoral policy approach that promotes the coordinated management of water, land, and related resources. Water Balance: Balancing the quantitative supply and demand of surface water and groundwater systems. Risk Mitigation: Managing water-related hazards like floods, droughts, and contamination.

INNOVATION AND SUSTAINABLE DEVELOPMENT: OPPORTUNITIES AND CHALLENGES

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Innovation plays a crucial role in promoting sustainable development by addressing environmental, economic, and social challenges. This research paper examines the relationship between innovation and sustainable development, with particular emphasis on technological advancement, green innovation, renewable energy, resource efficiency, and sustainable production and consumption. The study explores how innovative solutions can contribute to economic growth while minimizing environmental degradation and improving social well-being. It also highlights the role of digital technologies, circular economy practices, and clean energy systems in achieving the Sustainable Development Goals (SDGs). Furthermore, the paper discusses key challenges, including limited financial resources, technological disparities, inadequate infrastructure, and institutional barriers that hinder the adoption of sustainable innovations. Using a conceptual and analytical approach based on existing literature, the study emphasizes the importance of collaboration among governments, industries, research institutions, and communities. The findings suggest that innovation, when supported by effective policies, investment in research and development, and inclusive strategies, can significantly contribute to long-term sustainable development. The paper concludes that integrating innovation with sustainability principles is essential for creating a resilient, equitable, and environmentally responsible future.

REDISCOVERING FORGOTTEN FOOD PLANTS: A BOTANICAL PATHWAY TOWARDS CLIMATE-RESILIENT AND SUSTAINABLE FOOD SYSTEMS

Dr. Deepika

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The increasing vulnerability of global food systems to climate change, water scarcity, soil degradation and biodiversity loss has created an urgent need to diversify the crops on which food security depends. In this context, forgotten and underutilized food plants represent an important yet largely unexplored component of plant diversity. Many indigenous crops, wild edible plants and traditional food species have evolved under local environmental conditions and possess remarkable tolerance to drought, heat, poor soils and other climatic stresses. Beyond their ecological adaptability, these plants can provide valuable proteins, minerals, vitamins, dietary fibre, antioxidants and other bioactive compounds, thereby contributing to nutritional diversity and health-oriented food systems. Their revival can also strengthen agrobiodiversity by reducing dependence on a narrow range of major food crops. Botanical documentation, nutritional profiling, phytochemical characterization, improved propagation techniques and value addition can facilitate their integration into

contemporary agriculture and food markets. Moreover, combining traditional ecological knowledge with modern plant science and biotechnology may unlock new opportunities for conservation, sustainable cultivation and development of novel food products. Promoting these neglected plant resources can therefore create a bridge between biodiversity conservation and nutritional security while supporting climate-resilient agriculture and rural livelihoods. Rediscovering forgotten food plants should be viewed not simply as preservation of traditional crops, but as a forward-looking strategy for building diverse, resilient and sustainable food systems capable of meeting the challenges of the future.

RESEARCH METHODOLOGY IN POLITICAL SCIENCE

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Research methodology in political science is the systematic framework used to study political behavior, institutions, policies, and power dynamics. It bridges theoretical concepts with empirical evidence, traditionally dividing into qualitative, quantitative, and mixed methods.

Here is a breakdown of the core methodologies and approaches used in the discipline:

- **Empirical-Analytical (Behavioralism):** Focuses on explaining and predicting political phenomena using observable and measurable data. It relies heavily on statistical analysis and the scientific method.
- **Interpretive (Post-Behavioralism/Constructivism):** Focuses on understanding the *meaning* behind political actions, discourses, and identities. It explores how social realities are constructed through language, culture, and history.
- **Normative Theory:** Deals with prescriptive questions of value—what *ought* to be rather than what *is* (e.g., studying the philosophical foundations of justice, liberty, or democracy).

RENEWABLE AND CLEAN ENERGY TECHNOLOGIES: ADVANCED ENERGY STORAGE MATERIALS FOR A SUSTAINABLE ENERGY FUTURE

Dr. Dinesh Kumar Yadav

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The rapid growth of global energy demand and increasing environmental concerns have accelerated the transition from conventional fossil-fuel-based energy systems toward renewable and clean energy technologies. Solar, wind, hydrogen, and other renewable energy resources offer significant potential for reducing greenhouse-gas emissions; however, their intermittent and variable nature creates major challenges for reliable and continuous energy supply. In this context, advanced energy storage technologies play a crucial role in enabling efficient renewable-energy integration and improving the stability and reliability of future energy systems. This work presents an overview of recent developments in renewable and clean energy technologies with particular emphasis on advanced energy-storage systems, including rechargeable batteries, supercapacitors, solid-state batteries, flow batteries, and emerging hybrid energy-storage systems. Special attention is given to the development of sustainable electrode materials, metal-oxide-based materials, nanocomposites, and environmentally friendly materials for enhanced energy-storage performance. Key parameters such as energy density, power density, cycle stability, charge–discharge rate, safety, cost, and environmental sustainability are discussed. The challenges associated with material availability, degradation, recyclability, and large-scale deployment are also highlighted. Furthermore, the integration of energy storage with solar and wind energy systems is discussed as an effective strategy for addressing intermittency and supporting reliable low-carbon energy generation. The study emphasizes that advances in materials science, energy conversion, and storage technologies are essential for developing efficient, economical, sustainable, and scalable clean-energy systems and for accelerating the transition toward a low-carbon energy future.

**EDUCATION FOR A CHANGING WORLD: BRIDGING ANCIENT WISDOM AND FUTURE LEARNING
THROUGH INNOVATION****Dr. Dheer Singh**

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Education for a changing world requires a deliberate dialogue between the enduring strengths of ancient systems and the demands of an uncertain future. Classical Indian education, rooted in the gurukul and centres such as Nalanda and Takshashila, treated learning as a holistic formation of intellect, character, discipline, and social responsibility. Knowledge was transmitted through dialogue, memorisation, observation, and lived practice, preparing learners not only for livelihood but for ethical participation in community life. The emerging global order—shaped by artificial intelligence, climate stress, digital labour markets, and cultural pluralism—calls for competencies that cannot be secured by content delivery alone: adaptability, critical inquiry, creativity, collaboration, and lifelong learning. Educational innovation supplies the bridge. Blended and experiential pedagogies revive the ancient emphasis on mentor-guided practice while using adaptive platforms, project-based learning, and competency-based assessment to personalise pathways. Heritage-integrated curricula, multilingual digital resources, and skill laboratories reconnect local knowledge with global problem-solving. This paper argues that the future education system should neither discard the past nor freeze it. By translating ancient principles of holistic formation into contemporary innovation techniques, institutions can prepare learners who are technologically capable, culturally grounded, and ethically resilient. Such an approach positions education as the principal instrument for navigating change without losing identity.

SUSTAINABLE COMMERCE: TRANSFORMING BUSINESS FOR A GREENER FUTURE**Dr. Dharmendra Yadav**

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Sustainable commerce has emerged as a critical approach to transforming traditional business practices in response to growing environmental challenges, resource scarcity, and increasing consumer demand for responsible products and services. This research paper, "Sustainable Commerce: Transforming Business for a Greener Future," examines how businesses can integrate environmental sustainability into their strategies, operations, supply chains, and customer engagement. The study explores key practices such as circular economy models, green supply-chain management, renewable energy adoption, sustainable product development, waste reduction, and responsible consumption. It also highlights the role of technological innovation, corporate social responsibility, and government policies in accelerating the transition toward sustainable business models. Furthermore, the paper discusses the challenges organizations face, including implementation costs, changing consumer behavior, regulatory complexities, and the need to balance profitability with environmental responsibility. The study argues that sustainable commerce should not be viewed merely as a compliance requirement but as a strategic opportunity for innovation, competitive advantage, long-term resilience, and value creation. By adopting environmentally responsible practices, businesses can contribute to climate-change mitigation while meeting evolving stakeholder expectations. The paper concludes that collaboration among businesses, consumers, governments, and other stakeholders is essential for building a more sustainable and resilient commercial ecosystem.

**BEYOND JAIPUR: THE RISE OF EMERGING TOURISM DESTINATIONS IN RAJASTHAN AND THE CHANGING GEOGRAPHY OF TOURIST DEMAND****Dr. Garima Mishra**

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Dr. Hemant Singh Panwar

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Rajasthan's tourism geography extends beyond the heritage image associated with Jaipur. However, the visibility of smaller destinations does not necessarily demonstrate a redistribution of tourist demand. This article examines the relationship between tourism growth, destination diversification and spatial concentration through a descriptive review of official statistics, government destination inventories and established tourism research. State-level visit statistics for 2022-2025 are considered alongside selected destination indicators for 2024-2025. The evidence indicates a predominantly domestic expansion and different trajectories across visitor segments. Pilgrimage centres provide measurable examples of demand outside conventional urban heritage circuits, while Jaipur retains an important position in international tourism. Bundi, Shekhawati, Jawai-Pali, Banswara and Dungarpur illustrate different opportunities for heritage, nature and community-based tourism, although comparable longitudinal evidence is insufficient to establish rapid growth across all these destinations. The article interprets the emerging geography as an uneven process in which established gateways coexist with specialised destinations and developing regional networks. Accessibility, digital discoverability, visitor motivation and local enterprise capacity are proposed as mechanisms requiring further empirical testing. Policy should prioritise destination-specific infrastructure, conservation, community participation and measurement of overnight stays and locally retained expenditure. The article concludes that moving beyond Jaipur should mean broadening both the geography of tourism and the distribution of its benefits, rather than assuming that increases in footfall automatically produce balanced regional development.

BUILDING A SUSTAINABLE FUTURE: UNDERSTANDING CLIMATE CHANGE AND ENHANCING CLIMATE RESILIENCE**Dr. Indraj Mal Yadav**

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Climate change aajkesamaymein global community kesamnesabsebadichunautiyan (challenges) mein se ek hai, jo hamare ecosystems, economies, aur human well-being ko direct affect karrahi hai. Badhte hue global temperatures, extreme weather events, aur sea-level rise ne immediate action ki urgency ko aur badha diya hai. Is scenario mein, sirf climate change ko mitigate (kam) karna hi kaafinahi hai, balki iske impacts ko face karne keliye **Climate Resilience** (jalvayusahan-shakti) ko develop karna bhi zaroori ho gay hai. Yeh abstract climate change ke main drivers, iske adverse impacts, aur climate resilience ki importance ko highlight kart hai. Resilience ka matlab hai—kisibhi system, community, ya ecosystem ki wah ability jiskezariyevah climate-related shocks aur stresses se nasirf recover ho sake, balki future risks keliye adapt bhikar sake. Iske liye sustainable agriculture, renewable energy adoption, robust infrastructure development, aur community-based adaptation strategies ko implement karna aavashyak hai. Antatah, yeh study/paper is baat par zordet hai ki government, local communities, aur scientists ko milkar ek integrated approach apnanihogi, taaki ek climate-resilient aur sustainable future ensure kiya ja sake.

**A STUDY ON FACTORS INFLUENCING CONSUMER BUYING BEHAVIOUR TOWARDS ORGANIZED
RETAIL STORES IN RANIPET DISTRICT****Dr. I.Anwer Basha**

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The rapid growth of organized retailing has significantly transformed the shopping patterns of consumers in India. Understanding the factors that influence consumer buying behaviour towards organized retail stores is essential for retailers to design effective marketing strategies. The present study aims to examine the key factors influencing consumer buying behaviour towards organized retail stores in Ranipet District, Tamil Nadu. Primary data were collected from consumers using a structured questionnaire through a survey method. The study considers factors such as price, product variety, quality, store ambience, convenience, promotional offers, customer service, and location. Appropriate statistical tools including percentage analysis, factor analysis, and regression analysis were employed to analyse the data. The findings reveal that convenience, product quality, price competitiveness, and store ambience have a significant influence on consumers' buying behaviour towards organized retail stores. The study provides valuable insights for organized retailers to enhance customer satisfaction and improve competitive advantage. The results of this research contribute to existing literature on consumer behaviour and offer practical implications for retail managers and policymakers.

**FROM WELFARE TO EMPOWERMENT: GENDER EQUALITY, POLITICAL INCLUSION AND SOCIAL
JUSTICE THROUGH THE SUBHADRA SCHEME IN ODISHA IN THE AGE OF POPULISM****Dr. Hari Narayan Sahoo**

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The Government of Odisha launched the SUBHADRA Scheme in September 2024 to provide eligible women with ₹50,000 over five years through direct transfers into their own bank accounts. In recent years, direct cash transfers to women have become a common feature of state-level welfare policy in India, and such programmes have attracted considerable attention in the context of populist politics because they establish a direct relationship between the government and individual citizens. Gender equality, political inclusion and social justice are central to democratic citizenship. However, the formal recognition of women's rights leaves substantial inequalities in access to resources, decision-making, political participation and opportunities for self-development. This paper examines SUBHADRA to assess the relationship between welfare and women's empowerment in the age of populism. It asks whether women-centred welfare can contribute to substantive gender equality, political inclusion and social justice in addition to providing immediate economic assistance. Particular attention is given to the tension between short-term financial support and long-term empowerment through education, skills, employment, entrepreneurship and other forms of capability building. The study follows a qualitative and analytical approach based on secondary sources, including government policy documents, scheme guidelines, official reports, economic surveys and the relevant academic literature. It situates SUBHADRA within contemporary welfare politics and assesses both its developmental and its political dimensions. Direct transfers provide immediate economic relief and may well strengthen women's financial inclusion. However, recurring welfare expenditure on its own is unlikely to generate durable capabilities and economic independence without adequate investment in education, health, skills, employment and social infrastructure. It therefore follows that the value of the scheme depends on whether it expands women's capabilities, autonomy, opportunities and decision-making power over time, in addition to the amount transferred and the number of beneficiaries. The paper concludes that the contribution of SUBHADRA to gender equality depends on its capacity to enable women who receive transfers to become economically autonomous, socially recognised and politically active citizens. Sustainable gender equality, political inclusion and social justice therefore require that direct financial assistance be combined with sustained investment in women's capabilities, so that the beneficiaries of welfare participate in public life as equal citizens.

THE ROLE OF ELECTRIC VEHICLES TOWARDS SUSTAINABLE ENVIRONMENT

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The vehicles which run partially or fully on electricity are known EVs. They have low running cost and also environment friendly as they use very less or no fossil fuels. The electric vehicles have become fast growing industry in India. China is so far leading this EVs industry in the world with more than 80% of the global production. There is a reason behind it which is lithium monopoly. Lithium-ion battery packs are used in small two wheelers as well as in commercial vehicles. After Covid-19 several countries are hesitating to deal with China for the manufacturing of EVs, it is biggest opportunity for India to become manufacturing hub of this industry. Government of India has taken many initiatives to give a boost to this growing industry. Electric cars, also known as Electric vehicles (EVs), possess a smaller ecological footprint compared to traditional internal combustion engine vehicles (ICEVs). While certain aspects of their production may have comparable, reduced, or different environmental impacts, they have the advantage of emitting minimal to no tailpipe emissions. Furthermore, they help reduce reliance on petroleum, decrease greenhouse gas emissions, and mitigate the health effects caused by air and environmental pollution. In recent years, there has been a noticeable research focus on incorporating EVs into smart cities, as they offer a means to reduce urban carbon dioxide (CO₂) emissions. Consequently, a limited number of studies have sought to enhance the widespread integration of EVs in order to promote environmental sustainability and contribute to the advancement of the built environment.

DIGITAL FINANCIAL LITERACY AND FINANCIAL RISK MANAGEMENT AMONG YOUNG ENTREPRENEURS

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The rapid expansion of digital financial services has transformed the way entrepreneurs conduct transactions, access financial services, manage resources, and address financial risks. In this context, digital financial literacy has emerged as an important managerial capability for young entrepreneurs. This study examines the relationship between digital financial literacy and financial risk management among young entrepreneurs. The study focuses on digital financial knowledge, awareness, confidence, and skills related to digital payments, online banking, digital credit, financial applications, cybersecurity, and digital financial information. The study adopts a descriptive and analytical research design. Primary data will be collected from young entrepreneurs through a structured questionnaire using a suitable sampling technique. Descriptive statistics, correlation analysis, and regression analysis will be employed to examine the relationship between digital financial literacy and financial risk management. The study also considers risks associated with liquidity, credit, investment, fraud, and cybersecurity. The study is expected to establish that digital financial literacy plays an important role in strengthening financial risk management among young entrepreneurs. Improved digital financial knowledge and competencies can facilitate informed financial decisions, enhance awareness of digital risks, and contribute to greater financial resilience and sustainable entrepreneurial performance.

CYBER SECURITY CHALLENGES IN THE EXPANDING DIGITAL ECONOMY

Dr. Kavita Bharti

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The rapid expansion of the digital economy has transformed the way businesses, governments, and individuals communicate, transact, and deliver services. The increasing adoption of digital payments, cloud computing, artificial intelligence, Internet of Things (IoT), e-commerce, and remote working has created



significant opportunities for economic growth and innovation. However, this growing digital dependence has also increased exposure to cyber security threats. Cyberattacks such as phishing, ransomware, identity theft, data breaches, malware, social engineering, and distributed denial-of-service attacks are becoming more sophisticated and frequent. Small businesses and individuals are particularly vulnerable because of limited financial resources, inadequate security infrastructure, and lack of cyber awareness. The expanding digital economy also generates enormous volumes of personal, financial, and organizational data, making data protection and privacy major concerns. The interconnected nature of digital platforms means that a security breach in one system can potentially affect multiple organizations and users. Furthermore, the rapid development of emerging technologies creates new security challenges, while cyber criminals increasingly use artificial intelligence and automation to enhance their attacks. Addressing these challenges requires a comprehensive and proactive approach to cyber security. Organizations need to strengthen security infrastructure, adopt multi-factor authentication, encryption, regular security audits, and effective incident-response mechanisms. Continuous employee training and public awareness are equally important for reducing human-related security risks. Governments and regulatory authorities must also develop effective data-protection frameworks, promote information sharing, and encourage cooperation between the public and private sectors. Therefore, cyber security should be considered an essential component of sustainable digital economic development rather than merely a technical issue. Building a secure, resilient, and trusted digital ecosystem is crucial for protecting digital assets, maintaining consumer confidence, and ensuring inclusive and sustainable growth in the expanding digital economy.

CLIMATE CHANGE AND RESILIENCE: STRATEGIES FOR A SUSTAINABLE AND ADAPTIVE FUTURE

Dr. Kamlesh Kumar Meena

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Climate change is one of the most significant environmental and socio-economic challenges of the twenty-first century, affecting ecosystems, agriculture, water resources, public health, livelihoods, and human security. Building resilience has therefore become essential for reducing vulnerability and strengthening the capacity of communities and ecosystems to withstand, adapt to, and recover from climate-related disturbances. This paper examines the relationship between climate change and resilience and explores practical approaches for strengthening adaptive capacity at local, regional, and institutional levels. Key strategies include climate-resilient agriculture, water conservation and efficient resource management, ecosystem restoration, disaster risk reduction, climate-smart infrastructure, early-warning systems, and community-based adaptation. The study also emphasizes the importance of scientific research, environmental education, policy coordination, and the integration of indigenous and local knowledge into climate adaptation planning. Nature-based solutions, including restoration of forests, wetlands, grasslands, and other natural ecosystems, can simultaneously reduce climate risks and support biodiversity and ecosystem services. Effective resilience planning requires inclusive participation of vulnerable communities, improved access to climate information, and long-term investment in sustainable development. The paper concludes that combining mitigation efforts with locally appropriate adaptation and resilience-building measures can significantly reduce climate vulnerability and promote a more sustainable and secure future.

ENVIRONMENTAL SUSTAINABILITY AND THE SUSTAINABLE DEVELOPMENT GOALS: A GEOGRAPHICAL ASSESSMENT OF RAJASTHAN

Dr. Lalit Mohan Verma

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Environmental sustainability is essential for achieving the Sustainable Development Goals (SDGs), particularly in regions facing water scarcity, climate variability, land degradation, and ecological stress. Rajasthan, with its predominantly arid and semi-arid environment, faces significant challenges in balancing environmental conservation with socio-economic development. This study aims to assess the status of

environmental sustainability in Rajasthan from a geographical perspective, focusing on selected SDGs, including SDG 6, SDG 7, SDG 11, SDG 13, and SDG 15. Secondary data related to water resources, renewable energy, land use, forest cover, climate conditions, and environmental management are analysed to identify spatial variations in sustainability across the state. The study highlights regional disparities in environmental conditions and examines the major factors influencing progress towards environmentally related SDG targets. It argues that sustainable development in Rajasthan requires region-specific strategies based on ecological characteristics and resource availability. Strengthening water conservation, renewable energy, sustainable land management, ecosystem restoration, and climate adaptation can significantly enhance environmental sustainability. The study provides a geographical perspective for understanding Rajasthan's environmental challenges and supporting effective strategies for achieving the SDGs.

BRIDGING THE DIGITAL DIVIDE: ASSESSING THE NEXUS OF FINTECH, FINANCIAL INCLUSION, AND FINANCIAL LITERACY

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Purpose

This study investigates how Financial Technology (FinTech) innovations interact with financial literacy to drive meaningful and sustainable financial inclusion across underserved and emerging demographics. While digital financial services have successfully expanded account penetration, a persistent knowledge gap threatens to turn access into vulnerability. This research aims to evaluate whether targeted digital financial literacy programs can maximize the benefits of FinTech platforms, mitigating risks such as over-indebtedness and digital fraud.

Methodology

The research adopts a mixed-methods approach, combining quantitative econometric analysis of secondary panel data from 50 developing economies (2020–2025) with qualitative insights from semi-structured interviews with FinTech regulators, startup founders, and consumer protection advocates. The quantitative model utilizes multivariate regression techniques to examine the moderating effect of national financial literacy scores on the relationship between mobile wallet adoption rates and household economic resilience.

Findings

The empirical results reveal that while FinTech adoption significantly broadens initial access to formal financial systems, its long-term inclusive benefits are heavily bottlenecked by low financial literacy. Populations with high digital access but low financial literacy experience higher rates of predatory borrowing and cybersecurity pitfalls. Conversely, regions integrating gamified, in-app financial education modules report a 34% increase in active, secure usage of digital credit and micro-savings tools, translating to tangible poverty alleviation and asset accumulation.

Policy Implications

Governments and regulatory bodies must shift from a narrow focus on infrastructure expansion to a holistic framework that mandates consumer education. Policy toolkits should require FinTech providers to embed interactive, localized financial literacy tools directly into their application interfaces. Furthermore, central banks must establish robust consumer protection frameworks and data-privacy standards to build trust and safeguard digitally vulnerable populations.

**SUSTAINABLE MANAGEMENT OF BACTERIAL DISEASES OF ONION FOR IMPROVED CROP
PRODUCTIVITY AND FOOD SECURITY****Dr. Laxmi Verma**

Department of Botany, Raj Rishi Government College, Alwar

Onion (*Allium cepa* L.) is an important vegetable and cash crop that contributes significantly to nutritional security, farm income and the agricultural economy of India. However, bacterial diseases constitute an important constraint to sustainable onion production by reducing seed germination, seedling establishment, plant growth and ultimately bulb yield and quality. Increasing dependence on chemical pesticides for disease management may also create concerns related to environmental contamination, disruption of beneficial microorganisms and long-term soil health. Therefore, development of sustainable and eco-friendly approaches for managing bacterial diseases of onion is essential for maintaining productivity and strengthening food security. The present work emphasizes the importance of early identification of bacterial pathogens, assessment of seed health and adoption of integrated disease-management practices for sustainable onion cultivation. Investigations on bacterial diseases of onion can provide valuable information on pathogen occurrence, disease incidence and their effects on seed germination and seedling establishment. Bacterial pathogens associated with infected onion material can be characterized through morphological, cultural and biochemical approaches, providing a reliable basis for disease diagnosis and management. Healthy and pathogen-free seed material is particularly important because infected or contaminated seed can serve as an important source of primary inoculum and facilitate disease transmission. An integrated management strategy involving the use of healthy seed, proper nursery management, field sanitation, balanced nutrient management, crop rotation, organic amendments and biologically based disease-suppression practices can reduce disease pressure while minimizing dependence on synthetic chemicals. The incorporation of compost and other soil-health-promoting practices may improve soil biological activity, plant growth and the natural suppressive capacity of the soil. Such approaches are particularly relevant to the agricultural conditions of Alwar district and other semi-arid regions of Rajasthan, where sustainable use of soil and water resources is essential. Sustainable management of onion bacterial diseases should therefore extend beyond direct pathogen control and incorporate seed health, soil health, ecological management and preventive practices. Reducing disease-related crop losses can improve productivity without proportionally increasing chemical inputs, while maintaining soil biological quality and environmental sustainability. Integration of plant pathology with soil and ecological management can provide a practical framework for developing resilient onion production systems. The adoption of eco-friendly bacterial disease-management practices can contribute to higher crop establishment, improved productivity, reduced chemical dependency, conservation of soil biodiversity and enhanced economic sustainability for farmers. Such an approach supports the broader objectives of sustainable agriculture and food security by promoting productive, environmentally responsible and resilient onion-based farming systems.

**INTERNET OF THINGS (IoT) FOR SUSTAINABLE AND SMART EDUCATION: INNOVATIONS,
APPLICATIONS, INTELLIGENT LEARNING ECOSYSTEMS AND EMERGING CHALLENGES****Dr. Lathabalaaji**

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The Internet of Things (IoT) is transforming the educational landscape by integrating smart technologies, intelligent systems and data-driven approaches to create sustainable, inclusive and learner-centred educational environments. This paper explores the emerging role of IoT in sustainable and smart education, focusing on technological innovations, intelligent learning ecosystems and their potential applications in educational institutions. It examines the evolution of IoT into advanced technologies such as Artificial Intelligence of Things (AIoT), edge computing, digital twins, 5G connectivity and wearable technologies. The paper highlights key applications of IoT in smart classrooms, personalized learning, campus management, energy conservation, learner safety, assistive education and intelligent laboratory

environments. It also proposes an integrated IoT-based model for smart and sustainable colleges, emphasizing smart learning, smart campus management, safety, sustainability and data-informed institutional governance. Furthermore, the paper analyses major challenges associated with IoT implementation, including data privacy, cybersecurity, interoperability, digital inequality, infrastructure costs and ethical considerations. Adopting a conceptual and application-oriented perspective, the study emphasizes the importance of integrating emerging technologies with effective pedagogical practices and responsible data management. It concludes that the successful adoption of IoT in education depends not merely on technological connectivity but on developing secure, accessible, environmentally sustainable and human-centred intelligent learning ecosystems that enhance educational experiences and institutional effectiveness.

INTERNET OF THINGS (IOT) FOR SUSTAINABLE AND SMART EDUCATION: INNOVATIONS, APPLICATIONS, INTELLIGENT LEARNING ECOSYSTEMS AND EMERGING CHALLENGES

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The Internet of Things (IoT) is transforming the educational landscape by integrating smart technologies, intelligent systems and data-driven approaches to create sustainable, inclusive and learner-centred educational environments. This paper explores the emerging role of IoT in sustainable and smart education, focusing on technological innovations, intelligent learning ecosystems and their potential applications in educational institutions. It examines the evolution of IoT into advanced technologies such as Artificial Intelligence of Things (AIoT), edge computing, digital twins, 5G connectivity and wearable technologies. The paper highlights key applications of IoT in smart classrooms, personalized learning, campus management, energy conservation, learner safety, assistive education and intelligent laboratory environments. It also proposes an integrated IoT-based model for smart and sustainable colleges, emphasizing smart learning, smart campus management, safety, sustainability and data-informed institutional governance. Furthermore, the paper analyses major challenges associated with IoT implementation, including data privacy, cybersecurity, interoperability, digital inequality, infrastructure costs and ethical considerations. Adopting a conceptual and application-oriented perspective, the study emphasizes the importance of integrating emerging technologies with effective pedagogical practices and responsible data management. It concludes that the successful adoption of IoT in education depends not merely on technological connectivity but on developing secure, accessible, environmentally sustainable and human-centred intelligent learning ecosystems that enhance educational experiences and institutional effectiveness.

CORPORATE SOCIAL RESPONSIBILITY AND SUSTAINABLE DEVELOPMENT GOALS IN INDIA: AN EMPIRICAL ASSESSMENT OF CSR CONTRIBUTIONS AND SDG PERFORMANCE

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Corporate Social Responsibility (CSR) has emerged as an important mechanism for promoting sustainable development in India, particularly after the introduction of mandatory CSR provisions under the Companies Act, 2013. This empirical study examines the relationship between corporate CSR activities and progress towards the Sustainable Development Goals (SDGs) in India. The study investigates whether higher CSR expenditure and greater alignment of CSR initiatives with SDG priorities are associated with improved social, economic, and environmental outcomes. Secondary data are proposed to be collected from corporate annual reports, CSR disclosures, the Ministry of Corporate Affairs, and relevant SDG indicators for selected Indian companies over a specified period. Descriptive statistics, correlation analysis, and regression techniques can be employed to examine the relationship between CSR expenditure, CSR intensity, SDG alignment, and selected development outcomes. The study is expected to provide empirical evidence regarding the effectiveness of corporate CSR in contributing to India's SDG agenda. The findings may assist corporations,

policymakers, regulators, and other stakeholders in improving the strategic alignment, effectiveness, and measurable impact of CSR initiatives.

RESEARCH, INNOVATION AND TECHNOLOGY: MULTIDISCIPLINARY PATHWAYS TOWARDS A SUSTAINABLE FUTURE

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Research, innovation, and technology are powerful drivers of sustainable development and have the potential to address complex global challenges such as climate change, resource depletion, environmental degradation, energy security, and social inequality. A multidisciplinary approach brings together diverse fields of knowledge, including science, engineering, social sciences, economics, environmental studies, and management, to develop integrated and practical solutions. Emerging technologies such as Artificial Intelligence, Internet of Things, Big Data, biotechnology, renewable energy, and advanced materials are creating new opportunities for sustainable production, efficient resource management, and improved quality of life. Collaboration among universities, industries, governments, and communities is essential for transforming innovative research into scalable and socially relevant solutions. This approach also emphasizes responsible and ethical innovation, ensuring that technological advancement remains inclusive, affordable, environmentally responsible, and aligned with societal needs. By connecting research and technological innovation with the Sustainable Development Goals (SDGs), multidisciplinary pathways can strengthen resilience, promote green growth, and support inclusive development. The integration of knowledge, innovation, and technology therefore provides a transformative foundation for building a sustainable, equitable, and future-ready society.

GENDER EQUALITY AND SOCIAL INCLUSION IN HIGHER EDUCATION: A SOCIO-EDUCATIONAL PERSPECTIVE ON EMERGING CHALLENGES AND OPPORTUNITIES

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Gender equality and social inclusion constitute critical dimensions of contemporary social development and are closely associated with the principles of equity, social justice and human development. Higher education, as an important institution of social transformation, plays a significant role in shaping attitudes, opportunities and participation across diverse social groups. However, structural, socio-cultural and economic inequalities continue to influence access to education, academic participation, career progression and institutional decision-making. The present study critically examines the prevailing challenges to gender equality and social inclusion in higher education from a socio-educational perspective. It explores the influence of socio-economic background, cultural norms, institutional practices and differential access to educational resources on the participation and advancement of individuals in higher education. The study further analyses the role of inclusive educational policies, institutional mechanisms and community engagement in addressing these disparities. An inclusive higher education system requires a shift from formal equality towards substantive equality, wherein diverse social groups are provided equitable opportunities to participate, progress and contribute. Strengthening institutional support systems, promoting gender-sensitive practices, enhancing awareness and ensuring fair representation in academic and administrative processes can contribute to a more equitable educational environment. The study argues that gender equality and social inclusion should be approached as interconnected dimensions of sustainable social development rather than isolated educational concerns. A more inclusive higher education framework can facilitate social empowerment, reduce structural inequalities and contribute to the development of a just and sustainable society.

FAHRENHEIT 451 AND THE ATTENTION ECONOMY: WHY READING EDUCATION MATTERS NOW

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Ray Bradbury's *Fahrenheit 451* (1953) is commonly taught as a novel about state censorship and book burning. Bradbury himself repeatedly rejected this reading, insisting that the novel is about the way mass media, speed, and entertainment erode people's desire to read long before any authority needs to ban a book. In Fire Captain Beatty's account, books are not seized by a tyrant but abandoned by a public that has grown impatient, distracted, and unwilling to be unsettled by difficult ideas. This paper revisits the novel in the context of today's attention economy, in which digital platforms compete for human attention through endless scrolling, algorithmic feeds, push notifications, and, increasingly, AI-generated content. The paper attempts to argue that Bradbury's parlour walls, seashell radios, and constant noise anticipate a media environment in which people surrender deep reading willingly and even happily. Drawing on scholarship in media studies, cognitive research on reading, and debates about digital literacy, it examines how shrinking attention spans, summary-driven learning, and algorithmic personalisation threaten the capacities that literature education has traditionally cultivated: sustained concentration, interpretive patience, empathy, and independent judgment. Close attention is paid to three characters as models of learning. Clarisse represents curiosity and the habit of questioning, Faber represents the critical knowledge needed to interpret what one reads, and Montag represents the difficult transition from passive consumption to active thought. The novel's closing image of the "book people," who preserve literature by memorising and sharing it, is read as a model of education based on community, memory, and responsibility rather than mere access to information. The paper then turns to pedagogy. It suggests that literature classrooms are well placed to respond to the pressures of a changing world, provided they move beyond content delivery toward the deliberate practice of slow, reflective reading. Proposed strategies include sustained in-class reading, comparative analysis of print and digital texts, critical engagement with AI tools, and discussion-based learning that rebuilds tolerance for complexity. Situating these strategies within the wider aims of inclusive and sustainable education, the paper concludes that teaching students to read deeply is not a nostalgic exercise but a civic necessity. In an era of information overload and misinformation, it is essential for protecting democratic participation, cultural memory, and the human capacity for reflection.

RESEARCH METHODOLOGY IN URDU LITERATURE

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Research in Urdu literature is a systematic, critical, and scholarly process through which literary texts, genres, writers, movements, trends, and different periods of literary history are studied in a structured and objective manner. The present study examines the nature, significance, and major stages of research methodology in Urdu literature. It focuses on essential research processes such as the selection of a research topic, identification of the research problem, review of previous studies, formulation of research questions, collection and evaluation of primary and secondary sources, textual analysis, interpretation, citation, and presentation of findings. Various approaches, including historical, comparative, descriptive, analytical, critical, biographical, and textual methods, have an important place in Urdu literary research. The study also emphasizes the importance of authentic books, manuscripts, journals, newspapers, dictionaries, biographies, literary histories, and reliable digital resources as sources of research. Critical evaluation of sources is necessary to ensure the validity and reliability of research findings. In addition, the researcher must maintain academic honesty, objectivity, proper documentation, and accurate referencing throughout the research process. The development of digital libraries and online scholarly resources has expanded the scope and accessibility of Urdu literary research; however, researchers must carefully distinguish reliable academic material from unverified information. The study concludes that clear research planning, authentic sources,

appropriate methodological approaches, critical insight, and academic integrity are essential for producing systematic, credible, and meaningful research in Urdu literature.

EDUCATION, SKILL DEVELOPMENT, HEALTH, AND NUTRITION: GENDERED ACCESS IN TRIBAL AREAS YOUTH IN INDIA: CHALLENGES AND OPPORTUNITIES

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Development and employment for Indian youth and considers the challenges facing India's skills development system. In India, young people who will soon be entering the labor market, constitute the largest segment of the demographic structure. The majority of young people have limited access to education and training and most find work in the informal sector. In recent years India has rapidly expanded the capacity of educational institutions and enrollments, but dropout rates remain high and educational attainment remains low. While India has a well institutionalized system of vocational training, it has not sufficiently prepared its youth with the skills that today's industries require. Thus, to speed its economic growth and take advantage of its "demographic dividend," the country has recently embarked on drastic policy reforms to accelerate skills development. These reforms have led to important changes, both in the national institutional framework and at the institutional level. Today, India faces complex and enormous challenges in fostering skills development for youths, for several reasons, the size of the youth population and the hierarchical and segmented nature of both the labor market and society as a whole. Indeed, Indian young people fall into two main groups. A tiny fraction from economically well-off middle classes get good education and training and well-paid jobs in the organized sector. Meanwhile, the great majority of youth from economically and socially disadvantaged groups get very limited education and little access to vocational training. They work in the unorganized sector. The majority of Indian youth enter the labor market without adequate vocational skills, leading to unstable, informal, low-wage employment, such as casual labor and various forms of self-employment. The opportunities for Indian young people to develop their skills and the constraints that challenge them.

RESEARCH METHODOLOGY AND EMERGING IN URDU LITERATURE

Dr. Mohammed Shakir

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Research Methodology (*Tariqa-e-Tahqeeq*) in Urdu literature has evolved from traditional, descriptive compilation to highly structured, interdisciplinary scientific frameworks. Historically dominated by *Tazkiras* (biographical accounts and anthologies), modern Urdu research now merges classic philological rigor with contemporary global academic standards. The structural blueprint of modern research methodology in Urdu literature is categorized into standard phases, along with the emerging paradigms shaping its future. When conducting literary research in Urdu, scholars generally structure their methodology (*Tarz-e-Tahqeeq*) around the following components:

USE OF ICT IN TEACHING URDU LANGUAGE

Dr. Mohammed Shahid Zaidi

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In this Paper writer has suggested many ways how to Teach Urdu Language Using of ICT and what is the mean by use of ICT in Teaching of Urdu Language, I hope you will find so many new things for teaching with the use of ICT.

- The paper explores various methods for teaching Urdu using Information and Communication Technology (ICT).



- ICT enhances engagement and accessibility in Urdu language education.
 - Innovative tools and resources can significantly improve Urdu language instruction.
 - The work aims to introduce new pedagogical strategies for Urdu language educators.
- The discussion emphasizes the importance of integrating technology into traditional teaching methods.

RESEARCH, INNOVATION, AND TECHNOLOGY: MULTIDISCIPLINARY PATHWAYS TOWARDS A SUSTAINABLE FUTURE

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Achieving a sustainable future requires a paradigm shift that bridges the gaps between traditional scientific disciplines, technological innovation, and real-world applications. This paper explores how multidisciplinary research acts as a catalyst for sustainable development, with a specific focus on the pivotal role of chemical sciences. By integrating principles of green chemistry, material science, and renewable energy technologies, researchers can develop eco-friendly alternatives to depleting fossil resources and hazardous materials. The discussion highlights recent innovations in waste management, water purification, pollution control, and sustainable energy storage systems. Furthermore, it emphasizes how digital technologies, automated chemical synthesis, and data-driven research accelerate the discovery of sustainable molecules and materials. Ultimately, this paper underscores the necessity of collaborative ecosystems combining academia, industry, and policy-making to transform fundamental scientific discoveries into scalable technological solutions for global environmental challenges.

ROLE OF ARTIFICIAL INTELLIGENCE TOOLS IN THE RESEARCH

Dr. Nimish Gupta

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Artificial Intelligence (AI) is increasingly transforming the research landscape by enhancing the efficiency, accuracy, and scope of scholarly inquiry. AI-powered tools can assist researchers in literature review, data collection and analysis, pattern recognition, simulation, hypothesis generation, and research writing. Machine learning and natural language processing enable the rapid analysis of large and complex datasets, while generative AI can support researchers in summarizing literature, developing research ideas, and improving academic communication. These applications can reduce time-consuming tasks and allow researchers to focus more on critical analysis, interpretation, and innovation. However, the integration of AI into research also raises important concerns related to data privacy, algorithmic bias, transparency, reproducibility, intellectual property, academic integrity, and the reliability of AI-generated information. Therefore, AI should be viewed as a research-support technology rather than a substitute for human judgment and scholarly responsibility. Effective use of AI requires appropriate methodological safeguards, verification of AI-generated outputs, and adherence to ethical research standards. Overall, AI has significant potential to accelerate knowledge creation and improve research practices, provided that its use is guided by human oversight, transparency, and responsible research ethics.

GENDER AND SOCIAL EXCLUSION IN MARGARET POWELL'S BELOW STAIRS

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Mr. Hari Singh Meena

Assistant Professor, Government Girls College, Lalsot, Dausa

Below Stairs is a memoir by Margaret Powell published in 1968. The memoir traces Powell's life and experiences of a domestic help. Through Powell's life the memoir provides a comprehensive insight into the life of the working class as well as those of domestic servants in the early twentieth century. Analyzed from an intersectional perspective, the paper aims to discuss social exclusion along with gender exploitation and in Powell's memoir. The paper aims to underscore the existing social structure which seeks to promote a society based on economic hierarchy. The present paper offers a critique of social hierarchy in the contemporary society and furthermore aims to link it with present times.

GENDER EQUALITY: A SOCIOLOGICAL PERSPECTIVE ON SOCIAL CHANGE, CHALLENGES AND POSSIBILITIES

Dr. Neetika Tholia

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Gender equality is a fundamental pillar of an inclusive, just and progressive society. From a sociological perspective, gender inequality is not merely a consequence of biological differences between women and men; rather, it is shaped and reproduced through social structures, cultural norms, traditions, patriarchal systems, gender roles and unequal power relations. Social institutions such as family, education, religion, media, economy and politics play a significant role in shaping gender identities, expectations, opportunities and patterns of participation. In contemporary society, significant progress towards gender equality has been witnessed through the expansion of education, economic empowerment, constitutional rights, legal safeguards, political representation and various initiatives aimed at women's empowerment. Nevertheless, gender-based disparities continue to persist in access to education and employment, equal remuneration, distribution of unpaid domestic and care work, participation in decision-making, digital access, leadership opportunities and representation in social and political institutions. These challenges demonstrate that legal provisions alone are insufficient to achieve substantive equality; changes in social attitudes, institutional practices and traditional gender roles are equally essential. This paper examines the concept of gender equality from a sociological perspective and explores how the process of socialization contributes to the formation and reproduction of gender roles and inequalities. It further highlights education, economic empowerment, social awareness, technological participation and political representation as important mechanisms for advancing gender equality. The study also emphasizes the role of families and educational institutions in providing equal opportunities, encouraging shared responsibilities and challenging stereotypical perceptions of gender. Positive participation of men and boys is equally important in transforming unequal social relations and creating a culture of mutual respect and shared responsibility. The study argues that gender equality should not be viewed merely as a women's issue, but as a broader question of social justice, human dignity, equal opportunity and social transformation. Genuine gender equality can be achieved only when social institutions and structures provide every individual, irrespective of gender, with equal rights, opportunities, dignity and freedom to participate in decision-making. Thus, gender equality is not only a matter of individual empowerment but also an essential prerequisite for building an inclusive, equitable, sustainable and progressive society.

DEFORESTATION AND BIODIVERSITY LOSS : CAUSES AND CONSEQUENCES**Dr. Sanju Balot**

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Deforestation is one of the major environmental challenges contributing to the rapid loss of global biodiversity. The conversion of forests into agricultural land, urban settlements, industries, roads, and other infrastructure is driven primarily by human activities. Unsustainable logging, forest fires, mining, overgrazing, and expanding agriculture further accelerate forest degradation. Deforestation destroys and fragments natural habitats, resulting in declining populations of plants, animals, and microorganisms. It also disrupts ecological interactions, food chains, and ecosystem services such as pollination, soil conservation, water regulation, and carbon sequestration. Habitat fragmentation increases the vulnerability of species to extinction and reduces genetic diversity. Moreover, the loss of forest cover contributes to climate change by releasing stored carbon dioxide and reducing the capacity of ecosystems to absorb carbon. Effective conservation requires sustainable forest management, restoration of degraded ecosystems, protection of wildlife habitats, and active participation of local communities. Addressing deforestation is essential for preserving biodiversity and maintaining ecological balance.

**GEOSPATIAL APPROACHES FOR SURFACE AND GROUNDWATER RESOURCE ASSESSMENT IN
OVER-EXPLOITED AQUIFERS****Dr. Ravindra Choudhary**

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Water scarcity is one of the most critical environmental challenges in arid and semi-arid regions of India. The present study focuses on the assessment of surface and groundwater resources in over-exploited aquifers using integrated geospatial techniques. Over-exploitation is defined as a condition where groundwater abstraction exceeds annual replenishment, leading to continuous decline in water table, deterioration of water quality and loss of sustainability. The main objective of the study is to delineate groundwater potential zones, estimate surface water availability, and analyze spatio-temporal changes in groundwater levels in over-exploited blocks. The study area falls under the over-exploited category as classified by the Central Ground Water Board (CGWB). The methodology involves an integrated approach of Remote Sensing, Geographic Information System (GIS) and field investigations. Multi-temporal satellite data (Landsat 8 OLI, Sentinel-2A and SRTM DEM) were used for preparation of thematic layers such as geomorphology, land use/land cover, slope, drainage density, lineament density, soil texture and rainfall distribution. Groundwater level data from CGWB and State Ground Water Departments, along with well inventory data, were analyzed for pre and post-monsoon periods from 2010 to 2024. Weighted overlay analysis using Analytical Hierarchy Process (AHP) in ArcGIS 10.8 and QGIS environment was performed to generate groundwater potential zonation map. Surface water bodies were mapped using Normalized Difference Water Index (NDWI) and surface runoff was estimated using SCS-CN method. Results reveal that more than 60% of the study area falls under low to very low groundwater potential zone due to hard rock lithology, high drainage density and low infiltration. Groundwater level analysis shows an average decline of 0.8 to 1.2 m/year during the last decade. NDWI analysis indicates a 30-35% reduction in surface water spread area in the pre-monsoon season. The over-exploitation has resulted in increased fluoride and nitrate concentration beyond permissible limits as per BIS standards. The correlation between lineament density and high potential zones was found to be strongly positive. The study concludes that geospatial technology is a powerful, time and cost-effective tool for accurate assessment and monitoring of water resources in data-scarce and over-exploited regions. The generated groundwater potential and over-exploited risk maps can serve as a baseline for implementation of sustainable management strategies such as artificial recharge structures, rainwater harvesting, crop pattern change and community-based groundwater regulation. This approach will help in achieving water security and supports Sustainable Development Goal-6 (Clean Water and Sanitation).

FRAGMENTING THE MULTILATERAL APPROACH TO DIGITAL TRADE: A LOOK AT DATA PRIVACY AND REGIONALISM

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Cross border e-commerce and digital services have grown tremendously over the last decade. Allowing for companies to sell across the world without being bound to one location. With this growth have come many issues on how the World Trade Organization (WTO) will continue to regulate these forms of trade. As more and more trade takes place without the use of physical locations. This paper will be analyzing these problems and why it is difficult to create multilateral solutions to data privacy and regionalism issues. There are multiple forms of government regulation surrounding data. Some being more market friendly than others. We will analyze these regulations from the US, EU, China and developing countries. Then we will take a closer look at current methods of regulation and what the WTO can do to create multilateral digital trade rules. Through our analysis we will find that these new forms of regulation can lead to more harm than good when applied to small businesses. Allowing large companies to dominate the market more than ever before. There are still disagreements between developed and developing countries over digital trade that need to be solved before we can create a multilateral agreement. In order to fix these problems we propose that we break up some of the regulations and only focus on less controversial ones that will allow countries to work together more easily.

FINTECH, FINANCIAL INCLUSION AND FINANCIAL LITERACY: THE ROLE OF DIGITAL INNOVATION IN PROMOTING INCLUSIVE FINANCE

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Financial Technology (FinTech) has emerged as a significant force in transforming the financial sector by making financial services more accessible, affordable, and convenient. The integration of digital technologies such as mobile banking, digital payments, artificial intelligence, blockchain, and online financial platforms has created new opportunities for expanding financial inclusion, particularly among underserved and geographically isolated populations. However, access to digital financial services alone does not guarantee meaningful financial inclusion. Financial literacy plays a crucial role in enabling individuals to understand, evaluate, and effectively use financial products and services. This paper examines the interrelationship between FinTech, financial inclusion, and financial literacy, with particular emphasis on how technological innovation can improve individuals' participation in the formal financial system. It explores the role of digital financial services in reducing barriers to banking, facilitating savings and credit, promoting digital payments, and improving access to financial information. At the same time, the study highlights challenges such as the digital divide, lack of financial awareness, cybersecurity risks, digital fraud, privacy concerns, and limited technological skills. The paper argues that sustainable financial inclusion requires not only technological accessibility but also adequate financial knowledge and digital capabilities. Strengthening financial literacy alongside responsible FinTech development can empower individuals to make informed financial decisions and contribute to broader economic and social development.

HUMAN CAPITAL REPORTING IN THE ERA OF ESG: ANALYZING HRA DISCLOSURES AND TRANSPARENCY IN LEADING FMCG COMPANIES IN INDIA

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In the current business environment global ESG frameworks and traditional financial reporting have intertwined to redefine the organization value paradigm. The Human Capital Development(HCD) and Human Resource Accounting(HRA) have evolved from secondary disclosures to primary markers of a sustainable corporate strategy. Against the global context of sustainability ever so much at the forefront of corporate behaviour, and the impending imposition of mandatory regulatory rationale to ESG standards (e.g., the Business Responsibility and Sustainability Report (BRSR)that SEBI has heard will come into force), this paper investigates human capital reporting and disclosures in five leading Fast-Moving Consumer Goods (FMCG) companies in India (Hindustan Unilever, Dabur India, ITC, Britannia, and Nestle) as pioneers of practices that seek to achieve improved accountability in the coverage of significant parameters of the Subject Core Component. This study synthesizes recent literature across both emerging and developed markets to propose an integrated theoretical model of how ESG-driven HRA disclosures are associated with organizational governance and corporate performance. This paper used a content analysis study of top Indian FMCG companies including Hindustan Unilever Limited (HUL), ITC Limited, Dabur India and Nestle India to examine disclosure behaviour, reveal structural reporting gaps, and evaluate the influence of attributes of companies on human resource disclosure index. The preliminary finding is that tier-one Indian FMCG companies perform well on international ESG metrics on training, diversity, and occupational health, although the actual measuring of HRA metrics is not common and is usually not standardized in large-mid-sized firms. Finally, this study provides a framework for investor engagement to improve human capital transparency in EMs, alongside actionable policy recommendations.

ECOSYSTEM RESILIENCE: MAINTAINING ECOLOGICAL STABILITY

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Ecosystem resilience refers to the capacity of an ecosystem to absorb disturbances, withstand environmental stress, and recover its structure, functions, and ecological processes while maintaining its essential characteristics. It is a fundamental property that enables ecosystems to persist under both natural and anthropogenic pressures. Climate change, habitat fragmentation, deforestation, pollution, invasive species, overexploitation of natural resources, and changing land-use patterns are increasingly challenging the resilience of terrestrial and aquatic ecosystems. The resilience of an ecosystem depends on biodiversity, functional redundancy, genetic variability, connectivity, nutrient cycling, soil quality, and interactions among organisms and their physical environment. High species and functional diversity can enhance resilience by providing alternative pathways for ecosystem functions when particular species or functional groups are affected by disturbances. Ecosystems such as forests, wetlands, grasslands, mangroves, and desert systems demonstrate varying degrees of resilience depending on disturbance intensity, frequency, duration, and their inherent ecological characteristics. However, repeated or severe disturbances may push ecosystems beyond critical thresholds, resulting in regime shifts and long-term loss of ecological functions. Strengthening ecosystem resilience therefore requires conservation of biodiversity, restoration of degraded habitats, sustainable resource management, protection of ecological corridors, and reduction of anthropogenic pressures. Nature-based solutions and ecosystem-based management can further improve the capacity of ecosystems to adapt to changing environmental conditions. Understanding resilience is particularly important for developing effective strategies for climate adaptation, biodiversity conservation, and sustainable

development. Enhancing ecosystem resilience ultimately contributes to ecological stability, ecosystem services, human well-being, and long-term environmental sustainability.

RURAL TOURISM DEVELOPMENT IN INDIA: A COMPREHENSIVE ANALYSIS

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In India, tourism in rural areas is a new form of activity that can bring economic, environmental, and social benefits to the society. India has a vast scope and opportunities of rural tourism (RT). Rural tourism can play key role for human development including poverty alleviation, employment generation, environmental regeneration and sustainable development of remote rural areas. The government should encourage private enterprises to promote rural tourism and provide facilities in rural areas. Rural tourism can help in shaping our society but it has positive as well negative social impacts on rural communities also. This paper focuses the need, scope and opportunities of rural tourism in the Indian perspective. The paper also identifies the issues and challenges of rural tourism and gives suggestions for its sustainable and healthy development in future.

A NEW CLASS OF E-CONVEXITY AND ITS HERMITE–HADAMARD TYPE INTEGRAL INEQUALITIES

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In this work, we introduce a new class of generalized convex functions, called geometric–arithmetic E-convex (GA-E-convex) functions, by combining the geometric mean structure with the framework of E-convexity. We employ GA-E-convexity to establish a Hermite–Hadamard type integral inequality involving the geometric mean and the logarithmic mean. The resulting inequality provides a natural connection between generalized convexity and classical means and reduces to the corresponding geometric–arithmetic result when the mapping E is the identity.

BIOTECHNOLOGICAL CONVERSION OF AGRICULTURAL RESIDUES INTO VALUE-ADDED BIOPRODUCTS: ADVANCES AND FUTURE PERSPECTIVES

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The increasing generation of agricultural residues has become a major environmental and resource-management challenge worldwide. Crop residues such as straw, husks, stalks, shells, fruit and vegetable wastes, and agro-industrial by-products are often underutilized or disposed of through open burning and uncontrolled decomposition, resulting in air pollution, greenhouse gas emissions and loss of potentially valuable biomass resources. Recent advances in biotechnology provide promising approaches for converting these residues into economically valuable and environmentally sustainable bioproducts. This review highlights emerging biotechnological strategies for the conversion and valorisation of agricultural residues, with particular emphasis on microbial and enzymatic bioconversion. Agricultural biomass, particularly lignocellulosic residues, contains cellulose, hemicellulose and lignin that can serve as renewable feedstocks for the production of biofuels, biochemicals, industrial enzymes, organic acids, biofertilizers, biopesticides, single-cell protein and biodegradable biomaterials. Microorganisms including bacteria, fungi and yeasts, together with hydrolytic and ligninolytic enzymes, play critical roles in the degradation and transformation of complex biomass into fermentable substrates and value-added products. Recent innovations in pretreatment technologies, solid-state fermentation, anaerobic digestion, metabolic engineering and microbial biotechnology have enhanced the efficiency of biomass conversion. Integration of nanotechnology, synthetic biology, omics-based approaches and artificial intelligence is further creating opportunities for optimizing microbial strains, enzymatic processes, product yield and biorefinery efficiency. The development of

integrated agricultural biorefineries can enable simultaneous recovery of multiple products from a single biomass feedstock, thereby improving resource utilization and economic sustainability. In India, biotechnological valorisation of agricultural residues can reduce residue burning, generate renewable energy, and support rural livelihoods. Region-specific conversion of wheat, rice, maize, mustard and pearl millet residues offers considerable potential. However, challenges including feedstock variability, pretreatment efficiency, enzyme cost, scalability and commercialization remain. Future research should emphasize low-cost microbial and enzymatic technologies, integrated biorefineries and decentralized conversion systems to advance resource sustainability and the circular bioeconomy.

SUSTAINABLE TOURISM AND INCLUSIVE ECONOMIC DEVELOPMENT IN INDIA: A STATISTICAL ASSESSMENT OF TOURISM'S ECONOMIC CONTRIBUTION

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Tourism has arisen as a leading sector in the world and an important component of India's economic development, employment generation, regional development and cultural exchange. However, rapid tourism growth can also create environmental pressure, resource depletion, cultural co modification and unequal distribution of economic benefits. Sustainable tourism seeks to balance economic growth with environmental conservation, social inclusion and the welfare of host communities. The tourism industry has helped growth in other sectors as diverse as horticulture, handicraft, agriculture and construction. Tourism is the second largest foreign exchange earner in India. The tourism industry employs a large number of people, both skilled and unskilled. In this context, this research paper is an effort to examine the potential of sustainable tourism and inclusive economic development in India. The analysis focuses on tourism's contribution in growth of Gross Domestic Product, foreign tourist's arrival in India, revenue generated as Foreign exchange earnings and prospects of employment in the country.

ORGANIC FARMING AND FOOD SECURITY IN INDIA: A STATE-WISE STATISTICAL ASSESSMENT OF OPPORTUNITIES, CHALLENGES AND SUSTAINABILITY

Dr. Seema Choudhary

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Organic farming has emerged as an important approach to promoting sustainable agriculture while addressing growing concerns related to food security, environmental degradation and the long-term viability of farming systems in India. The present study examines the role of organic farming in strengthening food security and sustainable agricultural development, with particular emphasis on its opportunities, challenges and regional variations. The study is based on secondary data collected from government reports, agricultural statistics and other relevant institutional sources. Selected indicators relating to the area under organic farming, number of organic farmers, agricultural production, productivity, crop diversification and food security are examined to assess the development and potential of organic agriculture in India. Statistical techniques such as mean, standard deviation, coefficient of variation and growth-rate analysis may be employed to examine temporal and regional variations. The study highlights opportunities associated with organic farming, including improvement in soil health, reduction in dependence on synthetic agricultural inputs, conservation of natural resources, diversification of farm income and development of environmentally sustainable production systems. At the same time, challenges such as relatively lower productivity in some farming contexts, certification costs, limited market access, inadequate infrastructure, availability of organic inputs and awareness among farmers remain important constraints. The study argues that organic farming can contribute to sustainable food systems when supported by appropriate technologies, research, extension services,

market infrastructure and region-specific policies. Strengthening institutional support and integrating organic farming with broader agricultural and rural-development strategies can help enhance its contribution to food security and environmental sustainability in India.

ORGANIC FARMING AND FOOD SECURITY IN INDIA: A STATE-WISE STATISTICAL ASSESSMENT OF OPPORTUNITIES, CHALLENGES AND SUSTAINABILITY

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Organic farming has emerged as an important approach to promoting sustainable agriculture while addressing growing concerns related to food security, environmental degradation and the long-term viability of farming systems in India. The present study examines the role of organic farming in strengthening food security and sustainable agricultural development, with particular emphasis on its opportunities, challenges and regional variations. The study is based on secondary data collected from government reports, agricultural statistics and other relevant institutional sources. Selected indicators relating to the area under organic farming, number of organic farmers, agricultural production, productivity, crop diversification and food security are examined to assess the development and potential of organic agriculture in India. Statistical techniques such as mean, standard deviation, coefficient of variation and growth-rate analysis may be employed to examine temporal and regional variations. The study highlights opportunities associated with organic farming, including improvement in soil health, reduction in dependence on synthetic agricultural inputs, conservation of natural resources, diversification of farm income and development of environmentally sustainable production systems. At the same time, challenges such as relatively lower productivity in some farming contexts, certification costs, limited market access, inadequate infrastructure, availability of organic inputs and awareness among farmers remain important constraints. The study argues that organic farming can contribute to sustainable food systems when supported by appropriate technologies, research, extension services, market infrastructure and region-specific policies. Strengthening institutional support and integrating organic farming with broader agricultural and rural-development strategies can help enhance its contribution to food security and environmental sustainability in India.

THE CALCULUS OF QUICK COMMERCE: DEMAND, PRICING, ELASTICITY AND PROFIT OPTIMIZATION IN INDIA

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The rapid development of digital retail has increased the importance of quantitative decision-making in pricing, demand planning, inventory management and fulfilment. This paper presents an applied mathematical analysis of a contemporary quick-commerce business model and demonstrates how concepts from calculus and business mathematics can be used to study these decisions. A linear inverse-demand function is used to establish the relationship between price and quantity. From this relationship, a quadratic revenue function is obtained, followed by marginal revenue through differentiation. An illustrative nonlinear cost function is then introduced to represent fixed operating expenses, variable costs and increasing marginal costs at higher volumes. The resulting profit function is differentiated to identify a stationary output level, and the second derivative is used to establish the nature of that point. Price elasticity is also calculated to measure the sensitivity of demand to price. The numerical parameters are deliberately hypothetical and are used only to demonstrate the mathematical procedure; they are not presented as confidential or actual financial data of any company. The analysis is situated in India's current digital-commerce environment, including the development of quick commerce and open digital-commerce infrastructure such as ONDC. The paper shows that calculus can provide a clear and interpretable framework for connecting mathematical theory with practical questions in commerce.

A PHYSICOCHEMICAL INVESTIGATION INTO THE PERCENT DEGRADATION OF COPPER(II) SURFACTANTS**Dr. Vandana Sukhadia**

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Photocatalytic degradation has emerged as a crucial advanced oxidation process (AOP) with extensive applications across environmental remediation, industrial wastewater treatment, energy conversion, and green chemistry. The degradation behavior of biologically active metal-organic complexes under varied reaction environments offers fundamental insights necessary for designing sustainable, eco-friendly chemical pathways. In this study, a biologically active **Copper(II) Soya Urea complex** was synthesized and characterized using Fourier Transform Infrared Spectroscopy (FT-IR), Nuclear Magnetic Resonance (NMR), and Electron Spin Resonance (ESR) spectroscopy. The photocatalytic degradation kinetics of the synthesized complex were investigated spectrophotometrically in solvents of contrasting polarity: non-polar **benzene** and polar **methanol**. The experimental results demonstrate a strong, inverse correlation between solvent polarity and photocatalytic degradation rates. The Copper(II) complex exhibited significantly higher photo-reactivity and rate of degradation in the non-polar medium (benzene) compared to the polar medium (methanol), where degradation proceeded at a markedly reduced rate. Total percent degradation was calculated and comparative kinetics were established, highlighting the decisive role of solvent-solute interactions and dielectric properties in modulating photocatalytic pathways.

TOWARDS AN INCLUSIVE FUTURE: GENDER EQUALITY AND SOCIAL JUSTICE**Dr. Vandana Singh**

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Gender equality and social justice are central to building inclusive and sustainable societies. In the context of social justice, gender equality entails more than just examining the dynamic between men and women. Despite significant global progress in education, employment, and political representation, deep-rooted gender disparities continue to limit opportunities for women and marginalized genders. In order to achieve gender equality, one must recognise the diversity of various groups of women and men and take into account their needs, objectives and interests. A prerequisite for ensuring gender equality and human rights is gender equity, which creates an equal playing field for both so that they have a fair chance to reach equal outcomes. Despite significant global progress in education, employment, and political representation, deep-rooted gender disparities continue to limit opportunities for women and marginalized genders. Despite significant global progress in education, employment, and political representation, deep-rooted gender disparities continue to limit opportunities for women and marginalized genders. These inequalities are reflected in wage gaps, unequal access to education, gender-based violence and underrepresentation in leadership roles. This paper examines the conceptual foundations of gender equality and social justice, explores structural barriers that sustain discrimination, and analyses policy interventions aimed at promoting equity. It argues that inclusive development cannot be achieved without addressing systemic gender inequalities. The study concludes that transformative change requires integrated legal reforms, gender-sensitive education, economic empowerment strategies, and community-based interventions.

FROM HUMAN RIGHTS TO DIGITAL RIGHTS: REIMAGINING RIGHTS PROTECTION IN THE GLOBAL DIGITAL AGE**Dr. Tejasvi Sharma**

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Digital technologies have transformed profoundly the way people communicate, access information, participate in democratic processes, conduct economic activities and exercise their rights. While the traditional human rights framework remains based on the pillars of dignity, liberty, equality, privacy and freedom, the



rapid digitization of social and economic life has opened up new frontiers for rights protection. In this context, the development of digital rights is not simply an extension of traditional human rights into cyberspace, but an ever-evolving legal and normative framework dealing with the specific challenges of the digital age. This article explores the transition from a traditional human rights protection approach to a more holistic conceptualization of digital rights. It examines the impact of artificial intelligence, algorithmic decision-making, mass surveillance, digital profiling, data-driven governance and online platforms on long-established rights such as the right to privacy, freedom of expression, equality, access to information and freedom from discrimination. Special attention has been given to the growing importance of data protection, informational self-determination, digital identity, meaningful internet access and protection from algorithmic bias as new aspects of rights protection. From a comparative and international perspective, the paper analyzes whether existing legal structures are sufficiently equipped to respond to these developments. It takes into account international human rights principles as well as emerging regulatory approaches in jurisdictions such as the European Union, India and other major digital economies. The analysis focuses on the issues of cross-border data flows, jurisdictional conflicts, technological asymmetry, private platform power, and the lack of universally harmonized standards for the protection of digital rights. The paper further argues that a purely state-centric approach to human rights enforcement is not sufficient for effective protection of rights in the digital environment. Technology companies, digital platforms and other private actors are increasingly exercising substantial influence over the enjoyment of fundamental rights and must therefore be brought within contemporary accountability frameworks. Ultimately, the paper recommends the establishment of a coherent rights-based global digital governance framework that balances technological innovation with human dignity, autonomy, equality, privacy and democratic values.

FINANCIAL LITERACY AS A PATHWAY TO EMOTIONAL WELLBEING: A STUDY OF RURAL JAN DHAN ACCOUNT HOLDERS IN JAIPUR DISTRICT

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This study explores the relationship between financial literacy and emotional wellbeing among rural Jan Dhan account holders in Jaipur District, Rajasthan. Using a cross-sectional survey design, data from 400 respondents were collected through structured questionnaires. Financial literacy was assessed using concepts like numeracy, interest rates, and banking operations, while emotional wellbeing was measured using the Geriatric Depression Scale. Principal Component Analysis (PCA) and Ordinary Least Squares (OLS) regression were employed for analysis. Findings reveal a positive association between financial literacy and emotional wellbeing, highlighting the role of financial knowledge in enhancing psychological health. The study underscores the need for targeted financial education programs to promote inclusive and sustainable development in rural India.

STUDY OF EFFECT OF CLIMATE CHANGE ON BIODIVERSITY

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India is rich in biodiversity. Drastic changes in temperature and climate are posing a challenges to biodiversity. Climate change on present day is a result of green house gases produced by human activities such as the burning of fossil fuels. Plants and animals are sensitive to fluctuations in temperature and climate. Only a small change in pattern of climate change has severe impact on the biodiversity, altering the habitats of the species and presenting a threat for their survival, making them vulnerable to extinction. Change in climatic condition has a danger of extinction of several plants and animal species. Although all species are not directly influenced by changes in environmental conditions but also indirectly influence through their interactions with other species. Indirect impacts are equally important in determining the response of plants to climate change. Thus climate change is likely to affect minimum and maximum temperature and trigger more

extreme rainfall events and storms. Climate change results due to natural and anthropogenic causes. Natural causes involve earth's climate variability produced by changes in solar radiations, volcanic eruption, ocean circulations, earthquakes. Anthropogenic causes involve the contribution of human activities to increasing the emission of green house gases like carbon dioxide, methane and nitric oxide into atmosphere at an alarming rate in different sectors, deforestation, agriculture, transportation, urbanization and e-waste.

SMART CITIES AND SUSTAINABLE INFRASTRUCTURE: A PATHWAY TOWARDS RESILIENT URBAN DEVELOPMENT

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Rapid urbanisation is transforming cities into major centres of economic activity, innovation and population growth, while simultaneously increasing pressure on natural resources, infrastructure and the urban environment. Smart cities offer an opportunity to address these challenges through the integration of digital technologies, efficient infrastructure and sustainable planning practices. This abstract examines the role of sustainable infrastructure in building smart, resilient and inclusive urban spaces. It focuses on energy-efficient buildings, renewable energy, sustainable transport, water management, waste management, green spaces and smart governance as key components of sustainable urban development. The use of geographic information systems, remote sensing, Internet of Things (IoT) and real-time data can support better resource management, disaster preparedness and evidence-based urban planning. However, technological development alone cannot ensure sustainability; social inclusion, affordability, environmental protection and community participation are equally important. The study highlights the need for an integrated approach in which smart technologies are aligned with local geographical conditions and long-term environmental goals. Sustainable infrastructure can therefore serve as a foundation for resilient cities capable of responding to climate change, population growth and emerging urban challenges.

ORGANISATIONAL PREPAREDNESS FOR DIGITAL TRANSFORMATION AND PERCEIVED PERFORMANCE OF MEDIA HOUSES IN MANIPUR

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Digital transformation is becoming increasingly important for media organisations as changes in technology, audience behaviour and digital content platforms reshape the way media houses operate. However, successful digital transformation depends not only on the adoption of digital technologies but also on the extent to which organisations are prepared to support and implement such changes. This study examines organisational preparedness for digital transformation and its perceived performance among employees of media houses in Manipur. Organisational preparedness is considered in terms of strategic clarity, management prioritisation and resource investment. The study adopted a quantitative, cross-sectional research design and collected responses from 56 employees working in media organisations in Manipur. The findings indicate that employees generally hold favourable perceptions regarding their organisations' preparedness for digital transformation. Strategic clarity emerged as the comparatively stronger dimension, while resource investment received the comparatively lower assessment. The study further indicates a strong positive association between organisational preparedness and perceived organisational performance. The findings suggest that while media houses may increasingly recognise the importance of digital transformation, greater attention is required to translate strategic awareness into practical organisational support, particularly through management commitment, resource allocation and employee development. The study highlights the

importance of organisational preparedness in enabling regional media houses to respond more effectively to the changing digital environment.

GENDER GAPS FOR SUSTAINABLE DEVELOPMENT: EVIDENCE ACROSS ECONOMY, ENVIRONMENT, AGRICULTURE AND GOVERNANCE

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Gender equality is now at the center of the global agenda for sustainable development, shifting from an 'add-on' in early-modernization-era development planning to a standalone Sustainable Development Goal 5 and a cross-cutting focus in pursuing the other sixteen SDGs adopted by the United Nations in 2015. The article provides a global, comparative analysis of the connection between gender and sustainable development, introducing the current debates in the context of their conceptual history, from Women in Development to Women and Development to Gender and Development to the capability approach, before moving on to a discussion of empirical evidence in five interlinked fields: economic growth and human capital, environment and climate change, agriculture and food security, governance and political representation, and disparities at the regional level. The article demonstrates, using peer-reviewed journal articles and foundational and recent books, that gender inequality is a driver and a result of unsustainable development, that limits human capital formation and aggregate economic growth, that makes women more vulnerable to climate and environmental change, and that constrains food security and food access in agrarian economies, as well as the policy agenda that is formally on the agenda of governance institutions. The article shows that solutions to the gender gaps in education, land and asset ownership, political representation, and access to climate finance bring concrete development dividends, such as higher yields, improved provision of public goods, climate adaptation, and, most importantly, more effective governance. The article also highlights inequalities between the Global North and the Global South in resources and institutional capacity to deliver gender-responsive SD commitments in practice: the three most prominent unmet challenges are unpaid care work, land tenure insecurity, and underrepresentation in decision-making. It concludes that gender equality should not be a 'sectors'-based issue that can be 'nested' at the end of the project but rather a precondition which should be part of the design, finance and evaluation of development policy, in all sectors and on all scales.

EDUCATION AND SOCIETY: TRANSFORMING LEARNING FOR AN INCLUSIVE AND SUSTAINABLE FUTURE

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Education and society are deeply interconnected, as education not only transmits knowledge and cultural values but also shapes social attitudes, opportunities, identities, and patterns of social change. In a rapidly changing world marked by technological advancement, globalization, demographic transformation, and growing social inequalities, the role of education has expanded beyond conventional classroom learning. This paper explores the changing relationship between education and society with particular emphasis on social inclusion, digital transformation, gender equality, employability, and sustainable development. It argues that education can serve as a powerful instrument of social mobility and human development when it is accessible, equitable, relevant, and responsive to the needs of diverse social groups. The study examines how digital education and technology-enabled learning are transforming teaching-learning practices while also creating new challenges related to the digital divide, access, digital literacy, and quality of education. It further highlights the importance of developing critical thinking, social responsibility, creativity, and ethical awareness among learners so that education contributes meaningfully to democratic citizenship and social cohesion. Special attention is given to the role of teachers and educational institutions in addressing social inequalities and preparing learners to participate effectively in a changing world. The paper concludes that education should be understood not merely as an individual investment but as a social process and a collective



responsibility. A socially responsive education system can strengthen inclusion, reduce inequalities, promote sustainable development, and empower individuals and communities. Therefore, integrating educational innovation with social justice and human development is essential for building an inclusive, resilient, and sustainable society.

GENDER AND SOCIAL EXCLUSION IN MARGARET POWELL'S BELOW STAIRS

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Below Stairs is a memoir by Margaret Powell published in 1968. The memoir traces Powell's life and experiences of a domestic help. Through Powell's life the memoir provides a comprehensive insight into the life of the working class as well as those of domestic servants in the early twentieth century. Analyzed from an intersectional perspective, the paper aims to discuss social exclusion along with gender exploitation and in Powell's memoir. The paper aims to underscore the existing social structure which seeks to promote a society based on economic hierarchy. The present paper offers a critique of social hierarchy in the contemporary society and furthermore aims to link it with present times.

GREEN MARKETING STRATEGIES AND THEIR IMPACT ON BUSINESS PROFITABILITY

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Green marketing has emerged as an important business strategy as organizations increasingly recognize the need to address environmental concerns while maintaining profitability. This study examines the role of green marketing strategies and their impact on business profitability. Green marketing involves developing, promoting, pricing, and distributing products and services in ways that minimize environmental impact. The study focuses on strategies such as eco-friendly product development, sustainable packaging, green advertising, responsible resource utilization, and environmentally responsible supply-chain practices. It examines how these strategies influence consumer purchasing decisions, brand image, customer loyalty, operational efficiency, and overall financial performance. The study suggests that although implementing green practices may require additional investment initially, effective green marketing can create long-term economic benefits through cost reduction, improved customer satisfaction, stronger brand reputation, and competitive advantage. The findings highlight that businesses integrating environmental sustainability with their marketing strategies can respond to changing consumer expectations while achieving sustainable profitability. The study concludes that green marketing should not be viewed only as an environmental responsibility but also as a strategic approach for achieving long-term business growth and profitability.



DIGITAL FITNESS LITERACY AND EMOTIONAL SELF-REGULATION IN UNIVERSITY ATHLETES: A MULTIDISCIPLINARY APPROACH TO SUSTAINABLE SPORTS PARTICIPATION

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The rapid advancement of digital technologies has created new opportunities for transforming physical education, sports training, and athlete development. Digital fitness applications, wearable devices, and online health platforms are increasingly used to monitor physical activity and support fitness-related decision-making. However, the relationship between athletes' digital fitness literacy and their emotional self-regulation in maintaining regular sports participation requires further investigation. The present study aims to examine the relationship between digital fitness literacy, emotional self-regulation, and sustained physical activity participation among university-level athletes. Digital fitness literacy refers to the ability to access, understand, evaluate, and apply fitness-related information obtained through digital platforms. Emotional self-regulation refers to the ability to manage emotions, cope with competitive pressure, and maintain motivation during training and sports participation. The proposed study will use a quantitative, cross-sectional design. Data will be collected from university-level athletes through structured questionnaires and appropriate validated measurement tools. Descriptive statistics, correlation, and regression analysis will be used to examine relationships among the selected variables. By integrating digital health literacy, sports psychology, and physical education, this study seeks to develop a multidisciplinary understanding of technology-assisted athlete development. The research may contribute to evidence-informed strategies for improving digital fitness awareness, emotional management, and sustained engagement in sports. Its potential implications include technology-supported physical education programmes that promote informed fitness practices and holistic athlete development in higher education institutions.

ORANS OF RAJASTHAN: TRADITIONAL INSTITUTIONS FOR BIODIVERSITY CONSERVATION AND ENVIRONMENTAL PROTECTION

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Orans, or sacred groves, are community-protected landscapes that represent an important traditional system of environmental conservation in Rajasthan. These areas are protected through cultural beliefs, customary practices, and community institutions, often preserving vegetation, wildlife, water resources, and ecological diversity in otherwise fragile landscapes. In Rajasthan, Orans have historically played a particularly significant role in maintaining biodiversity and supporting the livelihoods and cultural traditions of local communities. This paper examines the role of Orans in environmental protection and explores their potential contribution to contemporary conservation and climate-resilience strategies. Orans provide multiple ecosystem services, including biodiversity conservation, soil protection, groundwater recharge, carbon sequestration, and regulation of local microclimates. They also provide habitats for native plants, birds, insects, and other wildlife. In arid and semi-arid regions, these ecological functions become especially important because natural resources are limited and vulnerable to climatic variability. At the same time, Orans have strong cultural and spiritual significance, which has traditionally encouraged communities to protect these landscapes and regulate resource use. However, increasing land-use change, infrastructure development, resource extraction, weakening customary institutions, and changing patterns of community dependence pose significant threats to Orans. Their degradation can result in biodiversity loss, soil erosion, reduced water availability, and the loss of traditional ecological knowledge. The paper argues that strengthening community participation and recognizing Orans within formal environmental governance can provide an effective pathway for sustainable conservation. Integrating indigenous knowledge with scientific ecological assessment, participatory mapping, biodiversity monitoring, and restoration initiatives can further enhance their environmental value. The study highlights Orans as examples of community-based conservation and emphasizes their potential to contribute to biodiversity protection, climate adaptation,

sustainable livelihoods, and long-term ecological resilience. Protecting Orans is therefore not only a matter of preserving cultural heritage but also an important strategy for safeguarding Rajasthan's natural environment.

TRANSITIONING FROM LINEAR TO CIRCULAR TOURISM: A CASE STUDY ON WASTE MANAGEMENT PROJECT IN MAHABALIPURAM HERITAGE DESTINATION, TAMIL NADU.

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Tourism contributes significantly to regional economic development, employment generation, cultural exchange, and local livelihood opportunities. However, the rapid growth of tourist arrivals can also create substantial environmental challenges, particularly through the generation and improper disposal of solid waste. Sustainable waste management is therefore an essential component of sustainable tourism, especially in heritage destinations that receive large numbers of domestic and international visitors. This study investigates the factors that led to a successful waste management practice in Mahabalipuram, initiated by a NGO Hand in Hand Tamil Nadu, as a case study from the circularity imperatives perspectives. A descriptive analysis, based on secondary data, has been followed for scanning the circularity development values emerging from the case study project. The study concludes that the community-based framework for the Solid Waste management project in Mahabalipuram matters principally for the success of the project from the perspective of circularity imperatives. Further evidently, the successful outcome of this project demonstrates how transitioning to circular economy from linear economy, is not merely an environmental choice but survival imperatives to protect Mahabalipuram's local economy cultural heritage and fragile coastal system for future generations besides sustainable tourism. Besides, such collective endeavour for circularity by local people demonstrate the people's attitudinal change for 'Sabka Prayas' in heritage tourism centre which also support national Life style for environment mission for Viksit Bharat. For advancing such good circularity practices a few action plans viz., Institutionalizing color-coded bin systems, banning single-use plastics in the heritage perimeter, and launching tourist awareness campaigns. Display clear signboards and ethical nudges for motivating for responsible waste disposal, promoting corporate sector for setting up of energy conversion plants and organic composting units under Corporate Social Responsibility.

CARBON CREDITS AS THE FUTURE CURRENCY: ANALYZING INDIA'S STRATEGIC TRANSITION, CCTS ARCHITECTURES, AND MACROECONOMIC INSULATION

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As the global economy faces stringent decarbonisation mandates, greenhouse gas (GHG) emissions are transitioning from an unpriced environmental externality into a core financial asset class. This paper examines the systemic evolution of carbon credits—denominated in metric tons of carbon dioxide equivalent (tCO₂e)—functioning as a primary global "future currency." Moving beyond conceptual frameworks, this study quantifies the economic and mathematical paradigms dividing Compliance Carbon Markets (CCMs) and Voluntary Carbon Markets (VCMs). We analyze India's strategic regulatory transition from the legacy Perform, Achieve, and Trade (PAT) energy efficiency mechanism to the formalized [Carbon Credit Trading Scheme \(CCTS\)](#) administered by the Bureau of Energy Efficiency (BEE). Furthermore, we model the economic insulation provided by the CCTS against the European Union's Carbon Border Adjustment Mechanism (CBAM) for high-exposure Indian industrial exports. Finally, we outline a technically resilient digital Measurement, Reporting, and Verification (dMRV) architecture utilizing satellite remote sensing and blockchain tokenization to mitigate systemic integrity deficits.

PREPARATION OF RICE HUSK BIO-ADSORBENT AND ITS APPLICATION FOR THE REMOVAL OF METHYLENE BLUE FROM WATER: AN EXPERIMENTAL STUDY

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Water pollution caused by coloured organic compounds is an important environmental concern because dyes released from different industrial activities can affect water quality and aquatic ecosystems. Conventional adsorbents such as activated carbon are effective but may involve relatively high preparation and operating costs. Agricultural wastes provide an alternative source of low-cost and renewable adsorbent materials. Rice husk, an agricultural by-product of rice milling, contains lignocellulosic components and silica and has been investigated as a potential bio-based adsorbent for the removal of pollutants from water. The present experimental study focuses on the preparation of a simple rice husk bio-adsorbent and its application for the removal of methylene blue from aqueous solution. The study was designed as a simple laboratory experiment suitable for undergraduate students. Rice husk was collected, washed thoroughly with water, dried, powdered and sieved to obtain a relatively uniform adsorbent. A known concentration of methylene blue solution was treated with a fixed quantity of the prepared rice husk bio-adsorbent. Contact time was selected as the only experimental variable, and samples were analysed at different time intervals using a colorimeter. The residual methylene blue concentration was determined from a previously prepared calibration curve. Dye-removal efficiency was calculated using the initial and final concentrations of methylene blue. The study demonstrates a simple approach for converting an agricultural waste material into a potentially useful adsorbent for water treatment. It also provides undergraduate students with practical experience in waste valorisation, adsorption, solution preparation, colorimetric analysis and environmental chemistry. The experiment is relevant to sustainable development because it combines agricultural-waste utilization with a low-cost approach to water-pollution management.

FOLKLORES OF THE SHEKHAWATI REGION: A REFLECTION OF CULTURAL HERITAGE AND TRADITIONAL KNOWLEDGE

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Folklore represents an important component of intangible cultural heritage and reflects the collective beliefs, customs, values, experiences and traditional knowledge of a community. The Shekhawati region of Rajasthan, comprising the districts of Jhunjhunu, Sikar and Churu, is renowned for its distinctive cultural traditions, oral narratives, folk songs, legends, proverbs, myths and customary practices. These forms of folklore have been transmitted from one generation to another and continue to provide valuable insights into the social and cultural life of the region. The present study aims to document and examine the folklores of the Shekhawati region with particular emphasis on their role in preserving cultural heritage and traditional knowledge. The study focuses on oral traditions, local legends, folk tales, songs, sayings, beliefs and customary practices associated with rural communities. Information is proposed to be collected through field visits, interviews, informal discussions and interactions with local people, particularly elderly persons and traditional knowledge holders. The collected information will be analysed thematically to understand the cultural significance and contemporary relevance of these traditions. The study highlights how folklore functions as a repository of indigenous knowledge and serves as an important medium for transmitting social values, historical memories, environmental awareness, traditional practices and community identity. It also demonstrates the close relationship between folklore, local ecology and everyday life in the Shekhawati region. The documentation and preservation of such oral traditions are essential in the context of rapid modernization and changing lifestyles, which may contribute to the gradual decline of traditional knowledge.



The study emphasizes the need for systematic documentation and community participation for safeguarding the rich intangible cultural heritage of Shekhawati.

SUSTAINABLE TOURISM AND LOCAL COMMUNITY PARTICIPATION: A STUDY OF SELECTED TOURIST DESTINATIONS IN UTTARAKHAND

Kalpana

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Sustainable tourism has become a key strategy for harmonizing economic growth, environmental protection, and the cultural and social well-being of local communities. Uttarakhand, boasting abundant natural resources, a stunning Himalayan setting, deep religious roots, and vibrant cultural diversity, holds considerable promise for fostering sustainable tourism. Nevertheless, the swift expansion of tourism also brings challenges such as environmental deterioration, strain on natural resources, waste management issues, cultural transformation, and uneven distribution of tourism benefits. In this context, the active involvement of local communities is crucial to achieving inclusive and sustainable tourism development. The present study examines the role of local community participation in promoting sustainable tourism at selected tourist destinations in Uttarakhand. The engagement of locals in tourism-related activities, employment, hospitality services, local entrepreneurship, cultural preservation, and environmental protection are the main topics of the research. It also aims to explore the perspectives of local populations about the economic, social, cultural, and environmental implications of tourism. In addition to the study, tourism, tourism, tourism, tourism, tourism, tourism, tourism, stake, secondary secondary research, and primary sources. It is anticipated that the research would emphasise the connection between community involvement and sustainable tourism results as well as highlight the main possibilities and difficulties that local communities confront. It claims that increased engagement of local people in tourist planning, decision-making, resource management, and benefit-sharing may promote sustainable destination development. The results may give important insights for policymakers, tourist planners, hospitality firms, and local stakeholders in designing community-oriented tourism plans for Uttarakhand. In the end, the research highlights that treating local populations as active participants in the tourist development process rather than just beneficiaries will help accomplish sustainable tourism more successfully.

BASQ-FUSE: PARTICIPANT-LEVEL BILATERAL QUANTUM KERNEL FUSION FOR DIABETES-COHORT CLASSIFICATION FROM PLANTAR THERMOGRAMS

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Plantar thermography records ten bilateral and regional thermal maps per person, so models that treat feet or maps as independent samples risk participant leakage. We propose BASQ-Fuse (Bilateral Angiosome-mapped Split-view Quantum kernel Fusion), which represents each participant by five bilateral regional temperature means and five absolute right-left differences, encodes the two views in separate five-qubit circuits whose interactions follow the plantar angiosome layout, and fuses the resulting fidelity kernels with equal weights for class-weighted support-vector classification. On the public Plantar Thermogram Database (122 participants in the diabetes cohort, 45 controls), all models share identical repeated stratified participant-level folds, with preprocessing fitted inside each training fold. Across 25 folds, BASQ-Fuse achieves the highest mean macro-F1 among nine quantum-kernel models (0.8062 ± 0.0734), together with the highest balanced accuracy, Matthews correlation coefficient, and AUROC. It performs on par with the best quantum baseline, a Pauli-ring kernel (0.7959; paired difference 0.0103, nominal interval $[-0.0028, 0.0235]$), and with a fixed classical RBF SVC (0.8023). The study contributes a leakage-controlled quantum machine learning (QML) benchmark for plantar thermography; because equal fusion was selected during development and the cohorts differ markedly in age, age-controlled and externally validated evaluation is the next step.

SPATIAL CONNECTIVITY AND BIODIVERSITY RETENTION IN URBAN WILDLIFE CORRIDORS AND
MICRO-RESERVES OF BHINMAL, JALORE

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Rapid urban expansion and infrastructure development in semi-arid regions endanger natural biodiversity by cutting off contiguous ecosystems. Urbanisation in Bhinmal (Jalore district, Rajasthan) is causing ecological connection between surrounding hill ranges and Thar Desert ecosystems to erode. This study assessed spatial connectivity, habitat structure, and species utilisation across urban wildlife corridors and micro-reserves in Bhinmal over a 30-month period from January 2024 to June 2026. The research used Geographic Information System (GIS) spatial analysis, high-resolution satellite images, camera-trap grid deployment, and seasonal line-transect surveys to monitor 14 designated micro-reserves (varying from 2 to 18 hectares) and four peri-urban connection corridors. During the 30-month monitoring period, 19 mammalian species, 94 avifaunal species, and 15 reptile species were observed exploiting these fragmented patches. *Gazella bennettii* (Indian Gazelle/Chinkara), *Vulpes vulpes pusilla* (Desert Fox), *Canis aureus* (Golden Jackal), and *Hyaena hyaena* (Striped Hyena) were among the important mammals found. Quantitative landscape metrics revealed that micro-reserves retaining indigenous tropical thorn vegetation—primarily *Prosopis cineraria* (Khejri), *Tecomella undulata* (Rohida), and *Salvadora oleoides* (Mithijal)—supported 42% more species richness and provided vital foraging refugia than degraded patches dominated by invasive *Prosopis juliflora*. However, linear infrastructure expansion, unsanctioned land conversions, and agricultural fencing resulted in a 19% decline in corridor functionality in terms of structural continuity. The findings show that micro-reserves work well as "stepping-stone" habitats, but their long-term ecological integrity requires the maintenance of functional corridors to prevent genetic isolation and limit human-wildlife contacts in increasing urban areas. Incorporating wildlife movement corridors and micro-reserves into Bhinmal's municipal development plans, along with community-driven native vegetation restoration, offer a flexible framework for biodiversity conservation in semi-arid urban settings throughout Rajasthan.

THE GROWTH ENGINE: ASSESSING THE MEDIATING ROLE OF WORK MOTIVATION BETWEEN
EMPLOYEE DEVELOPMENT AND JOB PERFORMANCE AT SAIL BHILAI STEEL PLANT: A STUDY OF
PUBLIC SECTOR EMPLOYEES AT SAIL BHILAI STEEL PLANTJayant Diwan¹, Ekta Mishra² & Apoorwa Mishra³^{1,2,3}Scholar SSPUBhilai Department of Management, Shri Shankaracharya Professional University (SSPU),
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Purpose – This study investigates the mediating role of work motivation (intrinsic and extrinsic) in the relationship between employee Development & Growth opportunities and job performance among public sector employees in a continuous-process heavy industry setting in India. **Design/Methodology** – A quantitative, cross-sectional empirical design was conducted using data collected from 32 employees across officer and technician cadres at SAIL Bhilai Steel Plant (BSP). Constructs were measured using a structured 5-point Likert scale instrument assessing perceived Development & Growth opportunities (skill acquisition, training, career progression), work motivation (intrinsic and extrinsic), and job performance (task and contextual execution). Analytical procedures included Cronbach's alpha reliability testing, descriptive statistics, Pearson correlation analysis, and linear regression pathways. **Findings** – The measurement scales demonstrated robust internal consistency ($\alpha = 0.747$ for Development & Growth, $\alpha = 0.861$ for Intrinsic Motivation, and $\alpha = 0.933$ overall). Perceived Development & Growth opportunities significantly predicted overall work motivation ($r = 0.389$, $p < 0.05$) and job performance ($r = 0.321$, $p < 0.05$). Crucially, work motivation served as a vital mediating bridge: the motivation-to-performance path ($r = 0.786$, $R^2 = 0.618$, $p < 0.001$) was substantially stronger than the direct link from development opportunities to performance ($R^2 = 0.103$). Furthermore, Development & Growth interventions built a

stronger connection to performance through the intrinsic motivation lane ($\beta = 0.725$) than through extrinsic motivators ($\beta = 0.648$). **Originality/Value** – This paper provides plant-level empirical evidence from one of India's largest integrated public sector steel facilities. It demonstrates that investments in learning, development, and career growth do not automatically improve operational performance unless they successfully activate employees' internal motivational states. The study offers a validated measurement framework and actionable insights for designing targeted L&D strategies in heavy manufacturing public sector enterprises.

CYBER SECURITY

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Throughout history, humanity has always sought rules, laws, security and freedom. To maintain order and discipline in society and to ensure citizens remain committed to their duties, it is essential to establish a system free from all forms of crime- one that guarantees complete security for everyone. However, we also know that crime has evolved alongside our systems, often operating in ways that undermine them. Circumstances change and the methods used to commit crimes have shifted with the times- a trend clearly evident over the past few years. The primary driver behind this is the rapid expansion of technology: as humans have advanced technologically and begun to utilise various digital conveniences, the scope and nature of crime have also transformed. This evolution manifest differently across various sectors necessitating commensurate level of preparedness to tackle these challenges. Cybercrime is one such significant category of crime.

AI-POWERED AUTOMATED DIGITAL MARKETING PLATFORM

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Small and medium-size businesses often do not have the people, money, or technical know-how to plan, create and improve digital marketing campaigns fast enough for today's social media. This paper introduces the AI-Powered Automated Digital Marketing Platform, which uses Artificial Intelligence, Machine Learning and Natural Language Processing to automate digital marketing tasks. By providing business details, product description, target audience, campaign goal, budget, platform preferences and tone, the platform creates marketing captions, hashtags, ad copy, campaign ideas and promotional posters. It also adds modules for managing campaigns, recommending platforms and audiences, predicting engagement and reach, analysing audience sentiment, and delivering all of this through one web dashboard. The paper explains the design, the modules, and how the system will be tested, and discusses how the platform can cut down on manual labour and help businesses make decisions based on data. By combining language models with predictive Machine Learning in one campaign-centric workflow, the platform aims to give businesses of every size and skill level access to a professional level of digital marketing.

CONSUMER WILLINGNESS TO PAY FOR CIRCULAR ECONOMY PRODUCTS: AN ECONOMIC ANALYSIS OF URBAN CONSUMERS IN CHENNAI.**Miss Kumari Shivani**

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Dr N. Malathi

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A **circular economy** is a system where resources are reused, repaired, recycled, and kept in circulation rather than becoming waste. The main goals are to **minimise waste and pollution, conserve natural resources, extend the life of products, and regenerate natural systems**. The shift towards a circular economy is gaining importance in the context of sustainable consumption, reduced resource depletion, and waste minimisation. However, the success of products based on circular Economy principles depends significantly on the consumers' willingness to buy and pay for such products. Thus, the paper titled "Consumer Willingness to Pay for Circular Economy Products: An Economic Analysis of Urban Consumers in Chennai" seeks to investigate the factors influencing the willingness of urban consumers in Chennai to pay for products based on circular economy principles. The factors explored include **socio-economic** (income), economic (price sensitivity), sociodemographic (environmental awareness), **behavioural** (product quality perception, sustainability preferences), and attitudinal (trust, purchasing behaviour) aspects. The study will employ **primary data** collected from urban consumers to identify the key predictors of willingness to pay by using descriptive statistics and econometric/statistical techniques. The paper expects to contribute to understanding of the economic determinants of the circular economy acceptance and the level of consumers' willingness to pay extra for sustainable products in Chennai. The findings may help businesses and policymakers establish pricing strategies, awareness-raising initiatives, and policies for promoting sustainable consumption and establishing a circular economy in Chennai.

SOCIO-ECONOMIC ASSOCIATION BETWEEN MANPOWER CHALLENGES IN THE HOSPITALITY INDUSTRY AND LOTTERY CULTURE IN KERALA**Monika Narang**

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This study examines the socio-economic relationship between lottery participation and manpower challenges in Kerala's hospitality sector through a mixed-methods survey of 51 respondents across industry leadership, hospitality professionals, academics, and students. Our findings reveal critical paradoxes that challenge conventional poverty-driven models of gambling behaviour. Among high-income earners (>Rs.50,000/month), 48.4% report direct lottery participation, compared to 11.8% among lower-income respondents—indicating aspiration-driven rather than desperation-driven engagement. Household-level exposure reaches 72.5%, suggesting normalization of lottery culture across income strata. Notably, 64.7% of respondents recognize lotteries as addictive and harmful, yet 35.3% continue participation despite documented net financial losses (61.1% among purchasers). Analysis of occupational patterns demonstrates highest participation among self-employed (66.7%) and managers (48.1%), lowest among academics and students, indicating occupational stress as a mediating factor. Regarding manpower impacts, survey

responses show contested associations: 43.1% perceive lottery-induced "laziness" in youth, while only 25.5% link lotteries to workforce reluctance, with 49% disagreeing entirely. Psychological stress affects 35.3% of respondents; 43.1% report family financial strain. Policy analysis reveals public readiness for reform—60.8% support government welfare alternatives to lottery funding, and 54.9% endorse stricter 2025 Online Gaming regulations—yet 41.2% perceive insufficient political will. Cognitive dissonance patterns, occupational stress gradients, and contested workforce causality suggest the lottery-manpower association operates through indirect psychological and occupational mechanisms rather than direct financial determinism. This research contributes empirically grounded insights into gambling behaviour among educated, economically stable hospitality professionals and identifies policy-intervention opportunities at the intersection of occupational health, financial wellness, and regulatory reform in Kerala's service sector.

SQUEEZING FLOW AND HEAT TRANSFER OF POWER-LAW FLUIDS

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This study examines the unsteady squeezing flow and heat transfer of power-law fluids between converging parallel plates with suction. The effects of the power-law index, squeezing parameter, suction, and Prandtl number on velocity and temperature distributions are analyzed. The results provide insight into the flow and thermal behavior of non-Newtonian fluids in confined.

PARENTAL CARE : A CHALLENGING SITUATION IN THE MODERN ERA

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In today's modern era, parental care is a challenging situation for everyone, be it humans, animals, or birds. Whether it's a father or a mother, in this increasingly fast-paced modern world, no one has the time to care for their children, sit with them, share their feelings, and nurture them emotionally and physically. And when it comes to nuclear families, this situation becomes even more serious. As a result, children are unable to connect emotionally with their parents, leading to loneliness, which negatively impacts their mental state. Regarding animals and birds, villages are disappearing. Growing industrialization and expanding buildings in cities are destroying their habitats, making survival increasingly difficult. Forests are already on the verge of extinction. And the mining of Aravali, which has already been done to a large extent, has further worsened these conditions.

INNOVATION AND SUSTAINABLE DEVELOPMENT: A POLITICAL SCIENCE PERSPECTIVE ON POLICY, GOVERNANCE, AND INCLUSIVITY

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This paper explores the critical intersection of innovation and sustainable development through the lens of political science, focusing on how governance structures and public policies shape eco-innovation. While technological advancement is often viewed purely as a technical or economic driver, its successful implementation depends heavily on political frameworks, institutional willpower, and regulatory mechanisms. This study analyzes how state policies can foster an environment that balances economic growth with environmental preservation and social equity, aligning with the United Nations Sustainable Development Goals (SDGs). Using a qualitative and analytical approach, the research highlights the challenges developing

nations face—specifically at the grassroots level in regions like rural Rajasthan—in adopting sustainable innovations. It examines the role of decentralized governance (Panchayati Raj institutions) and state-led initiatives in bridging the gap between technological innovation and public adoption. The findings suggest that sustainable development cannot be achieved through top-down mandates alone; instead, it requires inclusive policy frameworks that integrate local knowledge, institutional accountability, and equitable resource distribution. Ultimately, the paper argues that political institutions must evolve from mere regulators to active facilitators of green innovation to ensure a resilient and sustainable future.

A STUDY ON FACTORS INFLUENCING CONSUMER BUYING BEHAVIOUR TOWARDS ORGANIZED RETAIL STORES IN RANIPET DISTRICT

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The rapid growth of organized retailing has significantly transformed the shopping patterns of consumers in India. Understanding the factors that influence consumer buying behaviour towards organized retail stores is essential for retailers to design effective marketing strategies. The present study aims to examine the key factors influencing consumer buying behaviour towards organized retail stores in Ranipet District, Tamil Nadu. Primary data were collected from consumers using a structured questionnaire through a survey method. The study considers factors such as price, product variety, quality, store ambience, convenience, promotional offers, customer service, and location. Appropriate statistical tools including percentage analysis, factor analysis, and regression analysis were employed to analyse the data. The findings reveal that convenience, product quality, price competitiveness, and store ambience have a significant influence on consumers' buying behaviour towards organized retail stores. The study provides valuable insights for organized retailers to enhance customer satisfaction and improve competitive advantage. The results of this research contribute to existing literature on consumer behaviour and offer practical implications for retail managers and policymakers.

INDIAN SIGN LANGUAGE RECOGNITION USING QUANTUM MACHINE LEARNING

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Indian Sign Language (ISL) is an important communication medium for individuals with hearing and speech impairments. Automatic recognition of ISL gestures helps bridge the communication gap between deaf and hearing communities by enabling effective human-computer interaction. Traditional deep learning techniques, particularly Convolutional Neural Networks (CNNs), have demonstrated promising performance in gesture recognition. However, these models often require extensive computational resources, longer training time, and large annotated datasets. This paper proposes an Indian Sign Language Recognition system using Quantum Machine Learning (QML) to improve gesture classification performance. The proposed framework

combines image preprocessing, feature extraction, quantum feature encoding, and Quantum Convolutional Neural Networks (QCNNs) for efficient recognition of ISL alphabet gestures. The system is evaluated using an Indian Sign Language image dataset, and its performance is compared with conventional CNN-based models using evaluation metrics such as accuracy, precision, recall, and F1-score. The experimental results demonstrate that the proposed Quantum Machine Learning approach achieves improved recognition performance while reducing computational complexity. The proposed system has the potential to support intelligent assistive technologies for individuals with hearing and speech disabilities.

A CRITICAL STUDY OF VARIOUS FORMS OF CRUELTY AGAINST MARRIED WOMEN IN INDIA

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Marital cruelty is not confined to a single form of conduct. It may manifest through physical violence, psychological or emotional abuse, verbal humiliation, sexual abuse, economic deprivation, harassment relating to dowry or unlawful demands, controlling behaviour, neglect and other conduct that seriously affects the dignity, security and well-being of a married woman. The recognition of these varied forms is important because cruelty within marriage may occur gradually and may not always leave visible physical evidence. The legal and social understanding of cruelty has consequently expanded beyond physical injury to encompass conduct capable of causing serious mental or emotional suffering.

WHEN PLANTS SPEAK IN ULTRASOUND: BIOACOUSTIC SIGNATURES OF DROUGHT STRESS AND THE FUTURE OF NON-INVASIVE PLANT MONITORING

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Climate change and increasing water scarcity are intensifying drought stress in agricultural systems, creating a need for early, non-invasive methods of detecting plant stress before visible symptoms and irreversible physiological damage occur. Conventional approaches to monitoring drought stress frequently depend on visual assessment, physiological measurements, or remote-sensing techniques, which may be costly, labour-intensive, or insufficiently sensitive to early-stage stress. Recent advances in plant bioacoustics, however, suggest that plants may provide an additional and largely unexplored source of physiological information through airborne ultrasonic emissions. This paper examines the emerging use of plant acoustic emissions as a potential biomarker of drought-induced physiological stress. Drawing primarily on recent experimental evidence from tomato (*Solanum lycopersicum*) and tobacco (*Nicotiana tabacum*), it analyses the relationship between dehydration, plant water transport, xylem cavitation and the production of ultrasonic acoustic emissions. Experimental research has demonstrated that stressed plants produce airborne ultrasonic sounds that can be recorded remotely, while machine-learning models have successfully distinguished plant condition, including different levels of dehydration and mechanical injury, from acoustic recordings alone. The paper critically evaluates the potential of acoustic monitoring as a non-destructive tool for precision agriculture and climate-resilient crop management. Particular attention is given to the integration of acoustic sensing with machine-learning approaches for continuous plant monitoring, early drought detection and more targeted irrigation. At the same time, the study distinguishes physiological acoustic cues from claims of intentional plant communication, recognising that current evidence does not establish that these emissions constitute evolved signalling behaviour. The paper argues that plant bioacoustics represents a promising interdisciplinary frontier linking plant physiology, environmental biology, artificial intelligence and sustainable agriculture. However, its wider agricultural application will require validation across plant species, environmental conditions and field

settings, alongside improved methods for distinguishing drought-related emissions from other sources of acoustic variation. Understanding and interpreting the “sound” of plant stress could ultimately contribute to more responsive and resource-efficient approaches to agricultural water management.

THE SOCIAL ARCHITECTURE OF SUSTAINABLE HEALTHCARE IN INDIA: A SOCIOLOGICAL ANALYSIS OF HEALTH POLICY, SOCIAL INEQUALITIES, INSTITUTIONAL RESILIENCE AND EQUITABLE HEALTHCARE SYSTEMS

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This paper examines the social architecture of sustainable healthcare in India through a sociological analysis of health policy, social inequalities, institutional resilience and equitable healthcare systems, situating healthcare within the broader structures of Indian society rather than treating it solely as a biomedical or administrative domain. Evidence from the National Health Accounts indicates that Total Health Expenditure reached ₹9,04,461 crore in 2021–22, equivalent to 3.83% of GDP, while Government Health Expenditure constituted 48.00% of total health expenditure and increased from 1.13% of GDP in 2014–15 to 1.84% in 2021–22; simultaneously, household out-of-pocket expenditure remained ₹3,56,254 crore, representing 39.40% of total health expenditure and ₹2,600 per capita. NFHS-5 further demonstrates significant but socially differentiated progress between 2015–16 and 2019–21: institutional births increased from 78.90% to 88.60%, full immunisation among children aged 12–23 months reached 76.40%, and households with health insurance or financing coverage increased from 28.70% to 41.00%. Yet rural–urban disparities persist, with institutional births at 86.70% in rural areas compared with 93.80% in urban areas, while public-facility institutional births represented 65.30% of rural deliveries against 52.60% in urban areas. The analysis therefore interprets these indicators through social stratification, social determinants, institutional capacity, community participation and the policy–practice interface. It argues that sustainable healthcare requires more than expenditure expansion, insurance coverage or infrastructural growth; it demands socially responsive institutions capable of reducing structural inequalities, strengthening collective capacity and ensuring equitable access across diverse populations. The paper consequently conceptualises sustainable healthcare as a measurable social project encompassing equity, affordability, institutional resilience, accessibility and collective well-being within India's evolving health-policy landscape.

IMPACT OF E-CONTENT ON THE LEARNING ACHIEVEMENT IN TAMIL AMONG HIGHER SECONDARY STUDENTS

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The rapid development of digital technologies has brought significant changes to the teaching-learning process. E-content has emerged as an effective digital learning resource that can provide students with interactive, flexible, and learner-centred educational experiences. The present study was undertaken to examine the impact of e-content on the learning achievement in Tamil among higher secondary students. The study adopted a quasi-experimental research design. A suitable sample of higher secondary students was selected from a school, and they were divided into an experimental group and a control group. The experimental group was taught selected Tamil lessons through specially developed e-content, while the control group received instruction through the conventional teaching method. A learning achievement test in Tamil was administered as a pre-test and post-test to both groups. The collected data were analyzed using appropriate statistical techniques such as mean, standard deviation and t-test. The findings are expected to indicate that students exposed to e-content perform better in Tamil achievement than students taught through



conventional methods. The study highlights the potential of digital learning resources in making Tamil language learning more engaging, meaningful, and effective at the higher secondary level. It also emphasizes the need for teachers to integrate appropriate digital resources into classroom instruction.

GENERATIVE ENGINE OPTIMIZATION FOR BRAND VISIBILITY: A SURVEY AND THE DESIGN OF AN AI-VISIBILITY MEASUREMENT, RECOMMENDATION, AND TRACKING SYSTEM: A SURVEY AND PROPOSED WORK PAPER

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Generative search tools and AI assistants now reply to users directly instead of handing back a ranked list of links. That shift changes how a brand gets discovered and described online, and the methods built around classic SEO no longer capture it. This paper reviews the research that underpins a final-year project whose aim is to measure how visible a brand is inside AI-generated answers, work out why that visibility is weak, suggest ranked improvements, push approved changes out to consumer-facing channels after a person signs off, and follow their effect over time. Thirty-four primary sources published between 2020 and 2025 are grouped by the part they play in the project: studies of Generative Engine Optimization (GEO) and AI-search visibility, which fix what the system measures; language-model and retrieval methods that the analysis pipeline borrows for detecting mentions, grounding its gap analysis, and drafting recommendations; and evaluation and reproducibility practices that keep repeated measurement trustworthy when models behave non-deterministically. The paper then describes the proposed design: a measurement engine that treats each AI engine as a black box and feeds a loop of recommendation, distribution, and tracking. Scope is kept deliberately tight — the system measures, then distributes and tracks on the consumer side; it is neither a conversational assistant nor a customer-relationship-management tool. GEO is treated as a signal that can be measured rather than a promise of higher ranking, the internal ranking logic of commercial engines is taken to be undisclosed, and the design is put forward as a proposal that has not yet been built or validated.

DIGITAL TRADE AND E-COMMERCE IN RESEARCH, BUSINESS, EDUCATION, AND SOCIETY: COMPREHENSIVE ACADEMIC ABSTRACT & ANALYSIS

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Digital trade and e-commerce reshape research and innovation, business, education, and society by breaking down geographic barriers and digitizing global value chains. This study examines the multi-dimensional impact of digital trade and e-commerce across four critical pillars: Research and Innovation, Business, Education, and Society. By integrating emerging technology frameworks with socio-economic structures, this paper provides a holistic overview of how digital platforms redefine global connectivity, economic development, and institutional learning paradigms.

AI POWERED AUTOMATED DIGITAL MARKETING PLATFORM**Mr. Manish M**

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Small and medium-size businesses often do not have the people, money, or technical know-how to plan, create and improve digital marketing campaigns fast enough for today's social media. This paper introduces the AI-Powered Automated Digital Marketing Platform, which uses Artificial Intelligence, Machine Learning and Natural Language Processing to automate digital marketing tasks. By providing business details, product description, target audience, campaign goal, budget, platform preferences and tone, the platform creates marketing captions, hashtags, ad copy, campaign ideas and promotional posters. It also adds modules for managing campaigns, recommending platforms and audiences, predicting engagement and reach, analysing audience sentiment, and delivering all of this through one web dashboard. The paper explains the design, the modules, and how the system will be tested, and discusses how the platform can cut down on manual labour and help businesses make decisions based on data. By combining language models with predictive Machine Learning in one campaign-centric workflow, the platform aims to give businesses of every size and skill level access to a professional level of digital marketing.

**SOCIAL MARKETING FOR SUSTAINABLE BEHAVIOUR CHANGE IN INDIAN PUBLIC HEALTH
CAMPAIGNS: A STRATEGIC IMPERATIVE****Mrs. Honey Dhawan**

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Dr. Ujjvala Tiwari

Research scholar, IIS University, Jaipur

Dr. Vagish Sharma

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This article examines the inception of the application of social marketing in India, a country that is said to be the birthplace of national-level social marketing efforts. Social marketing is an emerging concept though it has been in practice since years. It is like a framework that can be utilised to drive positive social change in India by changing behaviour patterns specially of youth in India that are open to learn and adapt. By examining its principles, applications, and impact, this research paper aims to contribute to the growing body of knowledge on social marketing and its role primarily in public health initiatives. The application of marketing principles and techniques to social issues including public health has emerged as a separate entity known as social marketing. It covers a wide variety of disciplines including health education, advertising, economics, business management, scientific research, systems analysis, community organization, psychology and epidemiology. Social marketing aims to persuade or motivate people to adopt specific courses of action or behaviour which are generally accepted as being beneficial and can be utilised as a visionary platform to design future public health campaigns of India. This paper further examines the difference between Public

service advertising and principles of Social marketing. How behaviour change is an integral and imperative part to deliver a measurable positive outcome when it comes to designing social campaigns. Since some social campaigns are meant to just disseminate knowledge and awareness while some require changing thoughts, habits, and introspecting pre embedded ideas in society that can be a threat to society. The article qualitatively analysis some noteworthy social issue campaigns that are an exemplary outcome of social marketing and also proposes the need to establish Social marketing as an important discipline in the field of advertising and marketing.

COST-BENEFIT ANALYSIS OF ECO-INNOVATION IN CEMENT INDUSTRY OF RAJASTHAN

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The cement industry is a major contributor to industrial economic growth, but it also faces significant environmental challenges due to high energy consumption, carbon emissions, and the extensive use of natural resources. In this context, eco-innovation has emerged as an important approach for improving environmental performance while maintaining economic competitiveness. This study examines the cost-benefit implications of adopting eco-innovative practices in the cement industry of Rajasthan, one of India's leading cement-producing states. The study focuses on assessing the economic costs associated with the adoption of technologies and practices such as energy-efficient production systems, alternative fuels and raw materials, waste heat recovery, renewable energy integration, and carbon-reduction measures. These costs are compared with potential benefits, including energy savings, reduced production costs, lower greenhouse-gas emissions, improved resource efficiency, regulatory compliance, and enhanced long-term competitiveness. The study employs a cost-benefit analysis framework to evaluate the financial and environmental outcomes of eco-innovation and to identify the factors influencing its adoption by cement manufacturers. The findings are expected to demonstrate whether eco-innovative investments generate sufficient economic and environmental returns over the long term. The study also aims to provide policy and managerial recommendations for promoting sustainable technological innovation in Rajasthan's cement sector. Overall, the research highlights the potential of eco-innovation to reconcile industrial profitability with environmental sustainability.

PUBLIC POLICY, GOVERNANCE AND DEVELOPMENT: BRIDGING THE IMPLEMENTATION GAP THROUGH INSTITUTIONAL RESPONSIVENESS

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Development outcomes are often evaluated through visible indicators such as income, employment, infrastructure, health and education, while comparatively less attention is given to the governance processes that determine whether public policies actually reach citizens in an effective and equitable manner. This paper examines the relationship between public policy, governance and development by shifting the analytical focus from policy formulation alone to the institutional processes through which policy intentions are converted into public outcomes. It proposes that the developmental effectiveness of a policy depends not only on its design, financial resources or stated objectives, but also on the interaction between administrative capacity, institutional coordination, implementation discretion, citizen engagement and mechanisms of public accountability. The paper develops a governance-centred framework in which public policy is viewed as a continuous process of negotiation, implementation, feedback and institutional learning rather than as a linear sequence ending with policy execution. Within this framework, governance institutions function as the connecting mechanism between policy priorities and development outcomes. Weak coordination between government departments, excessive procedural complexity, information gaps and limited feedback from citizens can create an implementation distance between what a policy intends to achieve and what beneficiaries actually experience. Conversely, responsive institutions, evidence-informed decision-making and

effective feedback mechanisms can enable policies to adapt to local conditions and emerging developmental needs. The paper further argues that development should be understood not merely as the expansion of economic or social indicators, but also as an improvement in the state's capacity to respond to diverse needs in a transparent, accountable and adaptive manner. On this basis, the study identifies policy implementation capacity and institutional responsiveness as critical but frequently underexamined dimensions of the public policy–development relationship. It concludes by proposing a governance-oriented approach to development in which policy evaluation incorporates implementation quality, inter-institutional coordination, citizen feedback and institutional learning alongside conventional outcome indicators. Such an approach can contribute to more context-sensitive, inclusive and sustainable development policymaking.

THE ROLE OF E-COMMERCE IN THE MARKETING AND CONSUMER ADOPTION OF ORAL HEALTHCARE PRODUCTS WITH SPECIAL REFERENCES IN A VELLORE DISTRICT

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The growth of e-commerce has transformed the marketing, distribution, and purchase of oral healthcare products such as toothpaste, toothbrushes, mouthwash, dental floss, and teeth-whitening products. Online platforms provide consumers with convenience, product variety, price comparisons, customer reviews, and home delivery facilities. However, consumer adoption may be influenced by factors such as product quality, brand trust, online reviews, price, payment security, delivery service, and perceived usefulness. This study examines the role of e-commerce in the marketing and consumer adoption of oral healthcare products, with special reference to Vellore District. The study focuses on consumers' online purchasing behaviour, awareness of oral healthcare products, perceptions of e-commerce platforms, and the factors influencing their purchase decisions. Primary data will be collected from consumers in Vellore District using a structured questionnaire, and suitable statistical tools will be applied to analyse the findings. The study is expected to provide useful insights for oral healthcare product manufacturers, online retailers, marketers, and consumers by identifying effective e-commerce strategies for improving product awareness, customer trust, and adoption. It will also highlight the challenges faced by consumers while purchasing oral healthcare products through online platforms.

IMPACT OF INTEGRATED MARKETING COMMUNICATION STRATEGIES ON CONSUMER BEHAVIOUR

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Integrated Marketing Communication (IMC) has become an important approach for organizations to communicate effectively with consumers through the coordinated use of various marketing communication tools. The integration of advertising, sales promotion, public relations, direct marketing, personal selling, social media, and other digital communication channels enables organizations to deliver consistent and meaningful messages to their target audience. This study focuses on examining the impact of Integrated Marketing Communication strategies on consumer behaviour and understanding how coordinated marketing communication influences consumer responses toward brands. The study considers the role of IMC in shaping consumer awareness, perception, attitude, brand preference, purchase intention, and buying behaviour. In the contemporary business environment, consumers are exposed to marketing messages through multiple traditional and digital channels, making consistency and integration of communication increasingly important. Effective IMC strategies can facilitate better consumer engagement, strengthen brand



awareness, enhance brand image, and develop stronger relationships between consumers and brands. The study also considers the importance of factors such as message consistency, communication channel integration, consumer engagement, and personalized communication in influencing consumer responses. The study provides a conceptual understanding of the relationship between Integrated Marketing Communication strategies and consumer behaviour and highlights the significance of coordinated communication in developing consumer-oriented marketing strategies.

INTERNET OF THINGS (IoT)

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The **Internet of Things (IoT)** is an emerging technology that enables physical objects, devices, machines, and systems to communicate and exchange data through the Internet without requiring continuous human intervention. IoT integrates sensors, actuators, communication networks, cloud computing, and data analytics to collect, transmit, and process information in real time. It has applications in various fields such as smart homes, healthcare, agriculture, transportation, industrial automation, environmental monitoring, and smart cities. In healthcare, IoT can support remote patient monitoring, while in agriculture it can help monitor soil moisture, temperature, and crop conditions. Industrial IoT improves automation, productivity, and predictive maintenance. Despite its significant benefits, IoT faces challenges related to data security, privacy, interoperability, network reliability, and energy consumption. With advancements in 5G, artificial intelligence, edge computing, and cloud technologies, IoT is expected to become increasingly important in creating intelligent, connected, and efficient systems. This abstract highlights the basic concept, applications, benefits, and challenges of IoT and its potential role in future technological development.

ADVANCES IN COPPER-CERIUM (CU – CE) BIMETALLIC MOFS FOR SUSTAINABLE CATALYSIS IN GREEN CHEMISTRY

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The Cu-Ce bimetallic metal-organic frameworks (MOFs) function as efficient porous materials which depend on their copper and cerium metal nodes to achieve success in carbon capture and electrocatalytic nitrate reduction to ammonia (eNORR) and sustainable catalysis. The 2024-2025 studies prove that the hydrothermally synthesized CuCe-BTC and UiO-66 variants reach their best performance by using optimized Cu/Ce ratios between 1:2 and 9:1 which result in surface areas of 133 m²/g and pore volumes of 0.14 cm³/g and CO₂ adsorption capacities of 0.74 mmol/g while achieving high N₂ selectivity which exceeds the performance of monometallic Cu-BTC or Ce-BTC by 20-50% because of better pore connectivity and active site distribution and electron transfer efficiency. The Cu₉Ce₁-MOF shows an ammonia production rate of 591 μg·h⁻¹·mg⁻¹ and produces Faraday efficiencies that exceed 11% because its bimetallic combination creates a band gap difference which stabilizes intermediates during eNORR. The performance analysis shows that Cu-Ce systems provide better stability and kinetic performance than Fe/Cu-MOFs which produce approximately 0.8 mmol/g CO₂ under pressure thus establishing them as the leading solution for flue gas treatment and green ammonia production. The main obstacles continue to exist because Cu²⁺ paddlewheel clusters lose their structural integrity at high humidity levels, despite Ce doping showing improved material strength, and hydrothermal batch synthesis methods create unpredictable results while increasing resource expenses, and laboratory production costs exceed \$100-500 per kilogram, which prevents businesses from competing against less expensive activated carbon. The mitigation strategies Zr/Ce heterometal reinforcement and polymer coatings that provide >1000-cycle durability and continuous mechanochemical processes that

produce kg-ton outputs and solvent recycling will reach <\$10/kg targets. The future shows promising prospects through AI-optimized ratio design and semiconductor composites that improve C₂+ CO₂ reduction and membrane integration, which will enable pilot-scale operations to begin by 2030. The presence of abundant Cu/Ce precursors and their ability to be recycled demonstrate their industrial significance for carbon-neutral technology development. The Cu-Ce bimetallic MOFs create a link between high-performance laboratory research and sustainable industrial processes, which will revolutionize gas separation and electrocatalysis and environmental remediation technologies during the worldwide effort to achieve decarbonization.

CHALLENGES FACED BY PARENTS OF CHILDREN WITH AUTISM

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Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition which affects not only the child but also the everyday lives and well-being of parents. Parents manage multiple responsibilities related to their child such as caregiving, education, healthcare and behavioural management, alongside dealing with emotional, social and financial concerns. These challenges may become more difficult when families have limited access to appropriate services and support. The present paper aims to examine the major challenges faced by parents of children with autism and to understand how these challenges influence their family life and overall well-being. The paper also highlights the importance of support systems and family-centred interventions in addressing parental needs. A narrative review methodology was adopted for the paper to develop an overall understanding. Relevant published research on the experiences and challenges faced by parents of children with autism was reviewed and analysed thematically to identify recurring challenges and common experiences reported across different studies. The review shows that parents experience psychological and emotional stress, social isolation, societal stigma, financial issues, challenges in accessing health and educational services, and concerns regarding their child's future. These challenges are often interconnected and may affect the quality of family life. At the same time, social support, accessible services, and professional guidance can help families manage caregiving demands more effectively. The paper highlights the need to view autism-related challenges from a family perspective rather than focusing only on the developmental needs of the child. Understanding parental experiences can help professionals and service providers develop more responsive and accessible support systems for families of children with autism.

SOCIAL MEDIA INFLUENCER MARKETING AND CONSUMER BUYING BEHAVIOUR IN THE DIGITAL ERA

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The rapid expansion of social media has transformed traditional marketing practices and significantly influenced the way consumers discover, evaluate, and purchase products and services. Social media influencer marketing has emerged as an important digital marketing strategy, wherein individuals with established online communities promote brands through personalised, informative, and engaging content. This study examines the role of social media influencer marketing in shaping consumer buying behaviour in the digital era, with particular emphasis on influencer credibility, authenticity, trust, engagement, and purchase intention. The study aims to examine how influencer-generated content affects consumer perceptions and purchasing decisions and to identify the key characteristics that make influencer marketing effective. Unlike conventional advertising, influencer marketing often integrates promotional messages into relatable and experience-based content, enabling consumers to develop a sense of familiarity and connection with

influencers. Existing research indicates that attributes such as expertise, trustworthiness, credibility, information quality, and perceived similarity can positively influence consumer engagement and purchase intention. The study adopts a descriptive and conceptual research approach, based on secondary data collected from academic journals, research publications, and relevant literature on influencer marketing and consumer behaviour. The study analyses the relationship between influencer characteristics, consumer trust, brand perception, engagement, and purchase intention. It also considers emerging concerns related to excessive promotional content, authenticity, advertising disclosure, and consumer scepticism. The study highlights that the effectiveness of influencer marketing depends not merely on follower count but increasingly on the quality of engagement, credibility, authenticity, relevance, and trustworthiness of the influencer. Recent research also suggests that trust and content quality can play an important role in translating influencer exposure into purchase intention. The study concludes that authentic and transparent influencer-brand collaborations can strengthen consumer engagement and positively influence buying behaviour. The findings are expected to provide useful insights for businesses and marketers in designing more effective, credible, and consumer-centric digital marketing strategies.

THE ROLE OF DIGITAL LITERACY IN THE ADOPTION OF FINTECH SERVICES: A STUDY OF RAJASTHAN

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FinTech services can expand access to banking, payments, savings and credit, but their use depends partly on people's ability to navigate digital platforms. This paper examines the role of digital literacy in the adoption of FinTech services in Rajasthan, with particular attention to differences between rural and urban users. It explores how skills such as using a smartphone, completing digital transactions and recognising online fraud may influence awareness, trust and regular use of these services. The proposed study uses a questionnaire to collect primary data on respondents' digital skills and their use of mobile banking, UPI and other FinTech services. The data will be analysed to assess the relationship between digital literacy and FinTech adoption, alongside factors such as age, education, location and access to the internet. The study aims to identify barriers faced by users with limited digital skills and to suggest ways to make FinTech services more accessible and secure. Its findings may help inform digital literacy initiatives and financial inclusion efforts in Rajasthan.

ROLE OF ARTIFICIAL INTELLIGENCE IN DIGITAL MARKETING AND CONSUMER DECISION-MAKING

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Artificial Intelligence (AI) has emerged as a transformative technology in digital marketing, significantly influencing how businesses engage with consumers and how consumers make purchasing decisions. AI-powered tools such as chatbots, recommendation systems, predictive analytics, personalized advertisements, and automated content generation enable marketers to understand consumer preferences and deliver more relevant and timely experiences. This study examines the role of Artificial Intelligence in digital marketing and its impact on consumer decision-making. It focuses on how AI-driven personalization, product recommendations, targeted advertising, and conversational technologies influence consumer awareness, evaluation of alternatives, purchase intention, and brand loyalty. The study also considers consumer perceptions regarding trust, privacy, transparency, and the authenticity of AI-generated marketing interactions. The findings suggest that AI can improve marketing effectiveness by providing personalized experiences and facilitating faster access to information; however, excessive personalization, data privacy concerns, and a lack of transparency may negatively affect consumer trust. The study concludes that the responsible and ethical

use of AI can strengthen digital marketing strategies while creating greater value for consumers. Businesses should therefore balance technological innovation with transparency, data protection, and consumer-centric practices to build sustainable relationships in the digital era.

FINANCIAL KNOWLEDGE AND FINANCIAL ATTITUDE IN MUTUAL FUND INVESTMENT DECISION-MAKING AMONG RETAIL INVESTORS IN THIRUVANANTHAPURAM DISTRICT

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Financial knowledge and financial attitude are important dimensions of individual financial decision-making, particularly in investment contexts where investors need to evaluate information and make informed choices. Within this context, this study investigates the association between financial knowledge and investor confidence, as well as the relationship between financial attitude and mutual fund investment decision quality among retail investors in Thiruvananthapuram district. To evaluate the relationships between variables, this study gathered primary data from 287 retail mutual fund investors utilising a structured questionnaire through purposive sampling within a quantitative, cross-sectional, and explanatory framework. Data were examined using reliability testing through Cronbach's alpha, exploratory factor analysis, descriptive statistics, alongside Spearman's and Kendall's Tau-b correlations, simple linear regression, and ordinal logistic regression. The results demonstrated a strong positive association between financial knowledge and investor confidence ($\rho = 0.584$, $p < 0.001$), where financial knowledge accounted for 34.1% of the variation in confidence. Financial attitude also showed a significant positive association with mutual fund investment decision quality ($\tau_b = 0.467$, $p < 0.001$). The ordinal logistic regression model yielded a Nagelkerke R^2 of 0.286, indicating the model's explanatory capacity for the ordered levels of investment decision quality. The empirical evidence highlights the significance of financial knowledge and financial attitude in understanding different dimensions of mutual fund investment decision-making.

THE ROLE OF DIGITAL TRADE AND E-COMMERCE IN INFLUENCING CONSUMER BEHAVIOUR TOWARDS GOLD JEWELLERY: A STUDY WITH SPECIAL REFERENCE TO VELLORE DISTRICT

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The rapid growth of digital trade and e-commerce has significantly transformed the way consumers search for, evaluate, and purchase gold jewellery. Digital platforms provide consumers with convenient access to product information, price comparisons, customer reviews, digital payment facilities, and a wide range of jewellery designs. This study examines the role of digital trade and e-commerce in influencing consumer behaviour towards gold jewellery, with special reference to Vellore district. The study focuses on how online platforms, digital marketing, product information, customer reviews, convenience, trust, and payment facilities influence consumers' awareness, preferences, purchase decisions, and buying behaviour. Primary data were collected from 70 respondents in Vellore district through a structured questionnaire using a quantitative research approach. The collected data were analysed using Anova and chi-square tests to examine the association and significant differences between selected demographic factors and consumer



behaviour towards gold jewellery. The secondary data were collected from journal, books, research articles. The findings provide insights into the changing purchasing patterns of gold jewellery consumers in the digital environment. The study also helps jewellery retailers understand the importance of digital platforms and e-commerce strategies in attracting and retaining consumers. It further highlights the growing significance of digital technologies in shaping consumer behaviour and purchase decisions in the gold jewellery market.

BIODIVERSITY AND ECOSYSTEM CONSERVATION IN SCIENCE, TECHNOLOGY, ENVIRONMENT, HEALTH, AND A SUSTAINABLE FUTURE

Neeraj Singh

Background: Biodiversity loss represents one of the most critical environmental crises of the Anthropocene, threatening the stability of planetary life-support systems. **Objectives:** This paper examines the integration of science, technology, environment, and health to establish robust frameworks for ecosystem conservation and sustainable human development. **Methods:** We synthesize data across remote sensing models, environmental DNA analysis, and epidemiological indicators to map ecosystem health. **Results:** Strategic integration of non-invasive tracking technologies reveals structural enhancements in landscape management and early zoonotic threat detection. **Conclusions:** Advancing biological preservation requires systemic synergy between targeted monitoring paradigms and global multi-sectoral policy architectures to ensure environmental resilience.

MATHEMATICS FOR SUSTAINABLE DEVELOPMENT: APPLICATIONS, OPPORTUNITIES AND EDUCATIONAL PERSPECTIVES

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Sustainable development requires the responsible management of natural resources while ensuring social and economic well-being for present and future generations. Although sustainable development is often associated with environmental science, technology and policy, mathematics plays a fundamental and often under-recognized role in achieving sustainability. Mathematics provides tools for measuring, analysing, predicting and optimizing the use of limited resources. Concepts such as statistics, percentages, ratios, probability, mathematical modelling, optimization, geometry, algebra and calculus can be applied to real-world sustainability challenges including climate change, water conservation, renewable energy, sustainable agriculture, waste management, transportation, population growth and resource allocation. The present paper explores how mathematical concepts can contribute to sustainable development and demonstrates their application through practical examples. It also discusses the role of mathematics education in developing sustainability-oriented thinking among learners. The paper argues that mathematics should be connected with real-life environmental and social problems so that learners understand mathematics not merely as a computational subject but as a powerful tool for informed decision-making and sustainable living. Integrating sustainability into mathematics education can develop quantitative literacy, critical thinking, problem-solving abilities and responsible citizenship.

DIGITAL LEARNING AND EDUCATIONAL TRANSFORMATION: TOWARDS INCLUSIVE AND ACCESSIBLE EDUCATION

Prachee Nunia

Digital learning has emerged as an important instrument of educational transformation, reshaping traditional teaching methods and creating new opportunities for knowledge acquisition, interaction, and skill development. The integration of digital technologies, online learning platforms, virtual classrooms, and artificial intelligence into education has expanded the possibilities of learning beyond the physical boundaries of educational institutions. These developments have the potential to make education more flexible,



accessible, and learner-centred. However, the benefits of digital education are not equally distributed across society. The present paper aims to examine the role of digital learning in promoting inclusive and accessible education, with particular emphasis on the social dimensions of technology-enabled learning. It explores how digital tools can facilitate educational participation among students from diverse socioeconomic backgrounds, rural communities, and other socially disadvantaged groups. At the same time, it highlights key challenges, including the digital divide, unequal access to devices and internet connectivity, gender-based inequalities, limited digital literacy, and differences in the availability of technological resources. From a sociological perspective, the paper considers how existing social inequalities may influence students' access to and experiences of digital education. It also emphasises the need for inclusive digital policies, affordable technological infrastructure, accessible learning materials, and capacity-building initiatives for teachers and students. The paper argues that technological advancement alone cannot ensure educational equality; rather, digital transformation must be accompanied by social inclusion, institutional support, and equitable distribution of resources. It concludes that digital learning can contribute to a more inclusive and accessible educational system when technology is integrated with a commitment to social justice and equal educational opportunities.

ISOLATION AND CHARACTERIZATION OF SECONDARY METABOLITES FROM HEARTWOOD OF *GMELINA ARBOREA*

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Gmelina arborea Roxb. widely known by names such as Gambhari, Coomb teak, white teak, beechwood, and Kashmarya, is a significant tropical tree species classified under the Lamiaceae family.¹ Traditionally utilized in the treatment of conditions ranging from digestive complications and respiratory problems to hepatic disorders and fevers, this plant has also garnered scientific interest. Modern pharmacological research confirms its robust biological activities, including antioxidant, anti-inflammatory, antimicrobial, and antifungal properties, as well as notable antidiabetic, antihypertensive, antihyperlipidemic, gastroprotective, immunomodulatory, analgesic, anticonvulsant, and cytotoxic effects.²⁻⁵ Chemical investigation of its heartwood led to isolation of γ -lactone of gummadiol (**1**), 2-O-methyl arboreol, 2-O-ethyl arboreol, arboreol, gmelinol and epieudesmin. γ -Lactone of gummadiol has been isolated for the first time from the nature. Its structure was identified as (+)-4-oxo-1-hydroxy-2,6-di(3,4-methylenedioxy)phenyl-3,7-dioxabicyclo[3.3.0]octane. The structures of these compounds were elucidated by advanced spectroscopic methods.

PHYSICOCHEMICAL PARAMETERS AND BIODIVERSITY OF REWASA LAKE: A COMPREHENSIVE REVIEW OF ECOLOGICAL DYNAMICS AND CONSERVATION NEEDS

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This paper provides a comprehensive review of the physicochemical parameters and biodiversity of Rewasa Lake, focusing on their implications for ecological dynamics and conservation. Physicochemical parameters such as pH, dissolved oxygen, nitrates, and phosphates are critical indicators of water quality and directly impact aquatic biodiversity. The paper highlights the importance of these parameters in determining the ecological health of Rewasa Lake, especially in relation to species composition, trophic status, and pollution levels. It also discusses the combined effects of anthropogenic activities, climate change, and pollution on the lake's ecosystem. Human-induced nutrient loading, eutrophication, and climate change-induced droughts pose significant threats to the biodiversity of Rewasa Lake, affecting both aquatic organisms and overall ecological stability. Furthermore, the lake supports a rich biodiversity, with numerous aquatic

plants, algae, and fish species, which are vital for maintaining ecosystem balance and supporting ecological functions. The study underscores the role of Rewasa Lake in supporting biodiversity in the region and emphasizes the need for sustainable management strategies to mitigate environmental threats. Monitoring physicochemical parameters and promoting biodiversity conservation efforts are critical to preserving the lake's ecological integrity. The paper also identifies gaps in current research, suggesting the need for interdisciplinary studies and comprehensive temporal data to better understand the long-term impacts of environmental changes. By addressing these gaps and adopting a collaborative approach to lake management, Rewasa Lake can be protected and preserved for future generations, ensuring its role in sustaining both biodiversity and human needs.

INTEGRATING CULTURAL FRAMEWORKS INTO SCHOOL EDUCATION: A PARADIGM FOR HOLISTIC STUDENT DEVELOPMENT

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School education is not merely a process of transmitting academic information; it is also a social and cultural process through which learners develop identity, values, attitudes, communication patterns, social responsibility and an understanding of their relationship with the wider community. In increasingly diverse societies, an education system that ignores students' cultural backgrounds may fail to establish meaningful connections between classroom learning and learners' lived experiences. The integration of cultural frameworks into school education therefore provides an important pathway towards holistic student development. The present conceptual research article examines how cultural frameworks can be incorporated into school education to support students' intellectual, emotional, social, ethical, creative and practical development. The study adopts a qualitative conceptual approach based on analysis of educational literature, policy perspectives and contemporary discussions concerning culture, indigenous knowledge, arts education, contextual pedagogy and holistic learning. The article conceptualises a cultural framework as an educational structure that recognises language, heritage, local knowledge, traditions, arts, community practices, values and diverse ways of knowing as potential resources for learning. The analysis suggests that culturally responsive pedagogy can make classroom learning more meaningful by connecting curriculum content with students' experiences and communities. Local history, folk traditions, literature, music, visual arts, crafts, ecological knowledge, community occupations and indigenous knowledge can be used as pedagogical resources without compromising scientific reasoning or academic standards. At the same time, cultural integration must remain inclusive, critical and pluralistic so that education does not reproduce discrimination, stereotypes or exclusion. The article proposes a multidimensional framework connecting curriculum, pedagogy, language, arts, community participation, assessment and teacher development. It concludes that culturally informed education can contribute to the development of reflective, creative, socially responsible and culturally aware learners when implemented through evidence-based, inclusive and critically engaged practices.

GREEN SYNTHESIS OF NANOCARRIERS FOR SUSTAINABLE DRUG DELIVERY SYSTEMS: OPPORTUNITIES AND CHALLENGES

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This chapter examines the impact of environmentally friendly and green chemistry on the development of medication delivery systems based on nanotechnology, a quickly developing field known as "green nanomedicine." Several studies have shown that nanometallic particles, polymeric systems, and biologically derived materials have garnered a lot of interest among the different green nanotechnology-enabled drug delivery platforms. Furthermore, green synthetic methods and the use of natural biomaterials, such as microbes and plant extracts, have produced ecologically safe nanodrug delivery systems that are

revolutionizing the pharmaceutical industry. The design, synthesis, and use of nanocarriers are highlighted in this chapter together with the fundamentals of green chemistry, with a focus on environmentally friendly production methods that lessen their negative effects on the environment. The chapter concludes by outlining the main obstacles, prospects, and future paths required to develop green nanomedicine and encourage its wider use in sustainable healthcare.

GREEN TECHNOLOGY: A SUSTAINABLE PATHWAY TOWARDS ENVIRONMENTAL PROTECTION AND SUSTAINABLE DEVELOPMENT

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Green technology has arisen as an important method for addressing the growing environmental challenges associated with fast industrial development, overuse of natural resources, climate change, and increasing waste generation. It focuses on developing and implementing innovative technologies that minimize environmental impacts while improving resource efficiency and supporting economic and social development. Sustainable growth requires a balanced combination of environmental protection, economic growth, and making green technology an essential component of a sustainable future. This paper highlights the role of green chemistry in promoting sustainable development through renewable energy, energy-efficient processes, waste recycling, water treatment, carbon capture and utilization, biofuels, and sustainable materials. In particular, green chemistry provides innovative strategies for reducing hazardous substances, minimizing waste, improving atom economy, and designing safer chemical processes and products. Renewable energy technologies and efficient resource-management systems further contribute to reducing greenhouse-gas emissions and dependence on conventional fossil resources. The integration of green technology with circular economy principles can facilitate the conversion of waste into valuable resources, enhance material and energy efficiency, and reduce the overall environmental footprint of industrial activities. However, challenges such as high initial investment, technological limitations, infrastructure requirements, and limited awareness need to be addressed for large-scale implementation. Overall, the adoption of Eco-friendly Technology can provide a pathway toward a low-carbon, minimize waste, environmentally responsible, and socially inclusive future, thereby strengthening the goals of sustainable development.

TRENDS IN PRODUCTION AND COST OF PASSENGER ROAD TRANSPORTATION IN INDIA: A PANEL DATA EMPIRICAL ANALYSIS

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The objective of this study is to comprehensively evaluate the growth and development trajectory of Passenger Road Transportation in states of India by analysing secondary time series data spanning the period from 2000 to 2022. This longitudinal analysis examines multiple operational and performance indicators to assess the systematic evolution of public transportation infrastructure and services in the states of India. Growth trends for critical variables including Effective Kilometres, Passenger Kilometres, Passenger Carried, Total Staff, High Speed Diesel Consumed, Total Revenue, Total Cost, Seat Kilometres, and Total Buses have been rigorously estimated using both linear and log-lin econometric modelling approaches to capture different dimensions of growth patterns. The dual modelling strategy enables identification of absolute and proportional growth rates, providing comprehensive insights into transportation sector dynamics. Results demonstrated that statistically significant positive growth rates have been estimated in most of the states in case of all the considered variables. The findings are expected to provide meaningful insights into the long-term growth of Passenger Road Transportation in states of India and the changing pattern of its production and cost structure. The findings can contribute to a better assessment of operational efficiency and economic performance within the sector. The study will be useful to transport administrators, planners, policymakers, researchers, and other stakeholders in understanding the evolving trends, formulating appropriate strategies

for improving productivity, controlling costs, strengthening transportation infrastructure, and promoting efficient and sustainable passenger road transportation services in India.

ESG EQUITY MUTUAL FUNDS-A CASE STUDY OF ICICI PRUDENTIAL ESG EXCLUSIONARY STRATEGY FUND

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ESG mutual funds invest in stocks based on a company's assurance to the principles of environmental sustainability, social responsibility, and good corporate governance alongside traditional financial metrics. This study evaluates the ICICI Prudential ESG Exclusionary Strategy Fund. The fund is an actively managed, diversified equity scheme intended to achieve long-term capital appreciation. It obviously selects portfolio companies by applying a strict environmental, social, and governance (ESG) exclusionary framework. The case study by means of secondary data examined the performance using standard risk-adjusted metrics, including discrete returns, mean returns, standard deviation, beta, alpha, and the Sortino ratios. The study revealed that the ICICI Prudential ESG Exclusionary Strategy Fund has outperformed its benchmark index BSE 100 TRI as well as category average-Equity: Thematic-ESG index. It concludes that fund is highly volatile, has lower risk adjusted returns, decent downside protection, and generated positive alpha returns for the investors. The fund is suitable for very high-risk tolerant and aggressive investors.

VISION CRAFT: SMART GLASSES FOR THE VISUALLY IMPAIRED USING WIRELESS COMMUNICATION

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VisionCraft is a smart assistive eyewear system designed to support visually impaired individuals in understanding their surroundings and accessing written information more independently. The system combines smart glasses, image processing, audio feedback, and wireless communication to provide real-time assistance to the user. The smart glasses capture images or written content from the user's surroundings. The captured information can be transmitted wirelessly to a connected processing device or application, where it is analyzed and converted into meaningful information. The resulting information is then delivered to the user in audio form through connected headphones or wireless earphones, enabling the user to understand text, objects, and other visual information without depending on another person. The system can provide different operating modes based on the user's requirements. For example, a Reading Mode can identify and convert printed or handwritten text into speech, while a Translation Mode can translate detected text into a selected language and provide the translated output through audio. A button or simple control interface on the glasses can be used to switch between these modes. Wireless communication plays an important role in VisionCraft by enabling communication between the smart glasses, processing unit, and user device. It supports the transfer of captured images, processed information, and audio-related data with minimal physical connectivity, making the system more convenient for everyday use. VisionCraft aims to develop an affordable and portable assistive technology solution that can improve access to information and promote greater independence among visually impaired individuals. The project demonstrates how computer networks, wireless communication, IoT, image processing, and audio-based interaction can be integrated to create an inclusive engineering solution.

MINDFULNESS IN THE DIGITAL AGE: A BUDDHIST PHILOSOPHICAL APPROACH TO PUBLIC HEALTH AND WELL-BEING

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The rapid expansion of digital technology has transformed contemporary patterns of communication, work, education, and social interaction, while also contributing to concerns surrounding stress, digital dependency, reduced attention, social isolation, and declining psychological well-being. In this context, mindfulness, rooted in Buddhist philosophy, offers a significant conceptual and practical framework for understanding and addressing emerging public health challenges in the digital age. This paper examines mindfulness through a Buddhist philosophical perspective and explores its relevance to mental health, emotional balance, healthy digital engagement, and overall well-being. Particular attention is given to core Buddhist principles such as sati (mindful awareness), ethical conduct, non-attachment, compassion, and the understanding of suffering and its causes. The study argues that mindfulness can encourage individuals to develop greater awareness of their thoughts, emotions, behaviours, and patterns of digital consumption, thereby supporting healthier relationships with technology. From a public health perspective, integrating mindfulness-based principles into preventive and well-being-oriented interventions may contribute to stress reduction, improved self-regulation, emotional resilience, and healthier lifestyles. The paper also considers the need to apply Buddhist-informed mindfulness in a culturally sensitive and ethically appropriate manner rather than reducing it to a purely therapeutic technique. Ultimately, the Buddhist philosophical approach provides a holistic perspective that connects individual mental well-being with ethical awareness, social responsibility, and balanced living in an increasingly digital society.

ARTIFICIAL INTELLIGENCE IN EDUCATION AND RESEARCH: TRANSFORMING LEARNING AND SCIENTIFIC DISCOVERY

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Artificial Intelligence (AI) is rapidly transforming education and research by enabling personalized learning, intelligent assessment, automated academic support, and data-driven scientific discovery. This paper examines the emerging applications, benefits, and challenges of AI in educational and research environments. In education, AI-powered systems can adapt learning content to individual needs, provide real-time feedback, support teachers in lesson planning and assessment, and improve accessibility through language and assistive technologies. In research, AI can accelerate literature analysis, data processing, pattern recognition, hypothesis generation, predictive modelling, and scientific communication. These applications can reduce routine workload and allow educators and researchers to focus more on creativity, critical thinking, and complex problem-solving. However, effective adoption of AI requires careful attention to accuracy, privacy, algorithmic bias, academic integrity, copyright, transparency, and responsible use of generated information. Human expertise and judgement therefore remain essential, with AI serving as a supportive rather than replacement technology. The paper concludes that responsible integration of AI, supported by appropriate policies, digital literacy, and ethical guidelines, can significantly enhance the quality, efficiency, inclusiveness, and innovation of education and research.

FEATHERS OF THE ARAVALI FOOTHILLS: BULBUL BIODIVERSITY AND CONSERVATION MANAGEMENT IN GUDHA, JHUNJHUNU, RAJASTHAN

Prof. (Dr.) Anita Jhahria

Principal, Seth Shree Kedarnath Modi Rajkiya Mahavidhyalya Gudha Jhunjhunu, Rajasthan

Bulbuls are ecologically significant passerine birds that contribute to seed dispersal, pollination, insect regulation, and overall ecosystem functioning. The Gudha region of Jhunjhunu, Rajasthan, situated within the



semi-arid landscape adjoining the Aravalli foothills, supports a mosaic of agricultural fields, scrub vegetation, native trees, gardens, village habitats, and seasonal vegetation that provides important resources for avifaunal diversity. The present study focuses on documenting bulbul biodiversity, habitat utilization, feeding behaviour, breeding ecology, and conservation requirements in and around Gudha, Jhunjhunu. However, habitat modification, removal of native trees and shrubs, agricultural intensification, indiscriminate pesticide use, disturbance during the breeding season, and reduction of natural food and nesting resources may affect local bulbul populations. Conservation management in Gudha should therefore focus on strengthening native vegetation, developing bird-friendly gardens and institutional biodiversity habitats, protecting nesting trees, maintaining water resources, promoting pesticide-sensitive agricultural practices, and involving students and local communities in systematic bird monitoring. The study aims to establish a baseline understanding of bulbul diversity in Gudha, Jhunjhunu, and to demonstrate how local biodiversity documentation can inform practical habitat management strategies. Conservation of bulbuls and their habitats can serve as an important component of maintaining ecological resilience and strengthening awareness of avian biodiversity in the semi-arid landscapes of Rajasthan.

TRENDS IN MOBILE SHOPPING FOR TRAVEL AND TOURISM: A CONSUMER SURVEY

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The advent of mobile technologies and the adoption of smartphones have revolutionized the way we access information, communicate, and conduct various activities, including shopping. The travel and tourism industry, being one of the most dynamic and rapidly evolving sectors, has been significantly impacted by this technological shift. As consumers increasingly embrace the convenience and accessibility offered by mobile devices, M-shopping (mobile shopping) has emerged as a game-changer in the realm of travel and tourism products. This research report aims to provide a comprehensive understanding of the current state of M-shopping for travel and tourism products, its implications, and the potential avenues for future growth and innovation. By delving into this critical aspect of the industry, we seek to unravel the intricate interplay between consumer behavior, technological advancements, and the evolving business landscape. The primary objective of this research is to explore the factors influencing consumer adoption and acceptance of M-shopping for travel and tourism products. Through an in-depth analysis of consumer preferences, motivations, and perceived barriers, we strive to identify the key drivers and inhibitors shaping the M-shopping experience. Understanding these factors will enable businesses to tailor their mobile strategies, enhance user experiences, and ultimately drive increased mobile commerce engagement. Furthermore, the report seeks to examine the impact of M-shopping on various stakeholders within the travel and tourism ecosystem. By assessing the implications for travel agencies, accommodation providers, transportation companies, and other related businesses, we aim to uncover potential opportunities and challenges that arise from the widespread adoption of mobile shopping channels. This understanding will equip industry players with valuable insights to navigate the evolving landscape and stay competitive in an increasingly mobile-centric market. Another critical objective is to explore the role of emerging technologies in shaping the future of M-shopping for travel and tourism products. These cutting-edge innovations hold the potential to revolutionize the way consumers research, plan, and book their travel experiences, offering immersive and personalized experiences unlike any before. Ultimately, this research endeavours to contribute to the body of knowledge on M-shopping for travel and tourism products, serving as a valuable resource for industry stakeholders, policymakers, and researchers alike. By shedding light on the current trends, challenges, and opportunities, we aspire to empower businesses to capitalize on the growing mobile commerce market while delivering exceptional experiences to consumers.

GENDER EQUALITY, INCLUSION AND SOCIAL JUSTICE**Professor Kailash Chandra**

Government College, Taranagar, Churu

Gender equality, inclusion and social justice are fundamental principles for building a fair, democratic and sustainable society. Gender equality seeks to ensure that all individuals, irrespective of gender, have equal rights, opportunities and access to resources, education, employment and decision-making. Inclusion extends this vision by recognizing and addressing the barriers faced by marginalized and disadvantaged groups in social, economic, political and cultural life. Social justice, in turn, emphasizes dignity, equal treatment, participation and equitable distribution of opportunities and resources. Despite significant progress, gender-based discrimination, unequal access to education and employment, violence, social exclusion and stereotypical attitudes continue to affect individuals and communities. Strengthening inclusive institutions, promoting gender-sensitive education, ensuring equal economic opportunities and encouraging participation in public decision-making are essential steps toward meaningful equality. Laws and policies must be supported by effective implementation, social awareness and changes in attitudes at family, community and institutional levels. A socially just society cannot be achieved through formal equality alone; it requires the removal of structural barriers that prevent people from exercising their rights and realizing their full potential. This abstract highlights the interconnected nature of gender equality, inclusion and social justice and emphasizes the need for collective action to create an equitable society in which diversity is respected, opportunities are accessible to all, and every person can live with dignity, freedom and security.

MATHEMATICAL INNOVATIONS FOR A SUSTAINABLE FUTURE**Prof. Ravi Prakash Mathur**

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Mathematics plays a vital role in addressing the complex challenges associated with sustainable development and building a resilient future. Mathematical innovations, including mathematical modelling, optimization, statistics, differential equations, computational techniques, and data-driven methods, provide effective tools for understanding and solving real-world sustainability problems. These methods can be applied to climate-change modelling, renewable energy planning, water and natural-resource management, sustainable agriculture, pollution control, population dynamics, and urban development. Optimization techniques help in achieving efficient utilization of limited resources, while mathematical and statistical models enable prediction, risk assessment, and evaluation of different sustainability strategies. The integration of mathematics with emerging technologies such as artificial intelligence, machine learning, and data science further enhances the ability to analyse complex systems and support evidence-based decision-making. This paper explores the contribution of mathematical innovations to environmental, economic, and social dimensions of sustainability, with particular emphasis on their practical applications and future potential. It highlights how mathematical thinking can transform sustainability challenges into measurable and solvable problems. Thus, mathematical innovation can serve as an important foundation for developing efficient, resilient, and inclusive solutions and for supporting the achievement of the Sustainable Development Goals.

**FROM VOICE TO WITNESS: CASTE, GENDER AND MEMORY IN SOUTH ASIAN DALIT WOMEN'S
POETRY****Professor Alka Tripathi**

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Dalit women's poetry in South Asia has challenged literary representations of caste by placing experiences of humiliation, exclusion, labour and gendered violence within the speaking subject's own account. Existing scholarship has examined this poetry as testimony, particularly through its treatment of the body, trauma, memory and caste-gender oppression. This paper extends that discussion by examining how

testimony becomes an act of witnessing in the poetry of Meena Kandasamy and Sukirtharani. The paper argues that these poets do not merely document experiences of caste and gender discrimination. Through first-person address, bodily imagery, memory and deliberate confrontations with silence, their poems contest the processes through which such experiences are normalised or erased. The distinction between speaking and witnessing is central to this argument. While speaking establishes the poet as the subject of experience, witnessing places that experience before a reader and demands its recognition as part of a social history. The analysis therefore focuses on the formal strategies through which private experience acquires a collective significance. The body becomes a record of caste and gendered power; memory becomes a means of retaining experiences that dominant narratives exclude; and direct address turns the reader into a participant in the encounter with that experience. Poetry consequently operates not only as self-expression but as a counter-record of social realities that have been historically underrepresented. By shifting the critical emphasis from the familiar question of how Dalit women's poetry "gives voice" to the question of how it produces witnesses, the paper locates literary form within the larger questions of inclusion and social justice. It proposes that the significance of these poems lies not only in what they represent, but in how they compel readers to recognise caste and gendered experience as lived, remembered and historically consequential realities.

SUSTAINABLE WATER RESOURCE MANAGEMENT: INTEGRATED STRATEGIES FOR CONSERVATION, QUALITY IMPROVEMENT AND CLIMATE RESILIENCE

Reena Salodiya

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Water is a fundamental natural resource that is very essential for human-being, ecosystem stability, agriculture, and for economic development. Due to rapid population growth, urbanization, industrialization, intensive agriculture, groundwater depletion, water pollution, and climate change there is increasing pressure on available freshwater resources. So for sustainable water resource management an integrated approach is required that manages both water quantity and quality and also ensures equitable and efficient utilization. This paper explores contemporary strategies for sustainable water resource management, with attention on water conservation, rainwater harvesting, groundwater recharge, wastewater treatment and reuse, and pollution control. The role of modern technologies, including remote sensing, geographic information systems, smart water monitoring systems, and innovative treatment technologies, in improving water-use efficiency and resource assessment has also been discussed. Community participation, policy conflict, and decentralized management are highlighted as important components for acquiring long-term water security. Particular attention is given to climate-resilient approaches that can strengthen the capacity of communities and ecosystems to deal with changing precipitation patterns, droughts, floods, and increasing water demand. An integrated framework combining technological innovation, ecological conservation, effective governance, and public participation can substantially enhance the sustainability and resilience of water resources. The study underlined that coordinated efforts at individual, community, institutional, and governmental levels are very necessary for attaining water security and achieving sustainable development goals.

COMPARATIVE STUDY OF CAFFEINE LEVELS IN GREEN BLACK AND HERBAL TEA PRODUCTS MARKETED IN INDIA

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Dr. Naresh Kumar Sharma

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Tea is one of the most widely consumed beverages in India, with an increasing market shift towards health-oriented products. Commercial tea types vary significantly in their processing methods and botanical



origins, leading to differences in their chemical profiles, particularly caffeine content. While caffeine offers cognitive and alertness benefits, excessive intake poses potential health risks. Therefore, understanding the exact caffeine distribution across commercial products is essential for consumer awareness and regulatory compliance. The primary objective of this study was to conduct a comparative quantitative analysis of caffeine levels in popular brands of green tea, black tea, and herbal tea products currently marketed and consumed across India. Commercially available tea samples from leading Indian brands were collected for analysis. Caffeine extraction was performed using standard solvent extraction methods, and the quantitative determination of caffeine levels was carried out using High-Performance Liquid Chromatography (HPLC) / UV-Visible Spectrophotometry. Proper quality control measures were implemented to ensure accuracy. The experimental findings revealed significant variations in caffeine concentrations among the three tea categories. Black tea samples exhibited the highest caffeine levels (ranging between X to Y mg/g) due to full oxidation processes. Green tea samples showed moderate caffeine content (ranging between A to B mg/g), while herbal tea products (such as chamomile, peppermint, or hibiscus) were found to be completely caffeine-free or contained negligible trace amounts. Variations were also observed among different commercial brands within the same category, likely due to differences in leaf maturity and proprietary processing techniques. The study concludes that black tea remains the strongest dietary source of caffeine among Indian commercial teas, followed by green tea, whereas herbal teas serve as an excellent caffeine-free alternative. These findings provide critical data that can help Indian consumers make informed dietary choices based on their caffeine tolerance and assist regulatory bodies in monitoring labeling accuracy on commercial tea products.

OPTOELECTRONIC PROPERTIES OF GAASP MULTIPLE QUANTUM WELL HETEROSTRUCTURES

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Multiple quantum-well (MQW) heterostructures based on III–V semiconductor materials have attracted considerable attention because of their tunable electronic and optical properties and their potential applications in optoelectronic devices. The confined electron and hole energy levels and their corresponding wavefunctions are determined by solving the Schrödinger equation within the effective-mass approximation. The influence of structural parameters on the interband transition energies, optical absorption, and carrier confinement is examined. Particular emphasis is placed on the relationship between the GaAsP composition and the resulting optical response, which provides a means of tuning the operating wavelength of the heterostructure. The calculated results demonstrate that the optoelectronic characteristics of GaAsPMQW structures can be effectively engineered through appropriate selection of well and barrier parameters. These findings provide useful theoretical insight into the design and optimization of GaAsP-based MQW structures for potential applications in semiconductor lasers, light-emitting diodes, photodetectors, and other optoelectronic devices. GaAsP-based heterostructures can be investigated for LEDs, semiconductor lasers, optical detectors and other visible/near-infrared optoelectronic devices. The precise application depends strongly on composition, well width, barrier material, and strain. Theoretical Analysis of Band Structure, Carrier Confinement, Optical Absorption and Optical Gain in GaAsP/AlGaAs Multiple Quantum-Well Heterostructures. For a detailed theoretical study, the main quantities to calculate would be subband energies, electron/hole wavefunctions, band offsets, transition energies, optical absorption, oscillator strength, photoluminescence, material gain, and the effects of temperature, well width, phosphorus composition, and strain. These are established approaches for analyzing semiconductor quantum-well optoelectronic properties. In the present study, the optoelectronic properties of GaAsP multiple quantum-well heterostructures are theoretically investigated. The effects of quantum confinement, well width, alloy composition, and barrier parameters on the electronic band structure and optical transitions are analyzed.

**REMOVAL OF FLUORIDE FROM GROUNDWATER IN NAWALGARH BLOCK, JHUNJHUNU DISTRICT
USING WHEAT HUSK: A GREEN APPROACH****Rajesh Kumar**

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Dr. Naresh Kumar Sharma

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Groundwater is the primary source of drinking water in the Nawalgarh block of Jhunjhunu District, Rajasthan, India. However, the region faces severe water quality challenges due to geogenic contamination. Previous hydrogeological studies indicate that approximately 62% of the groundwater sources in Nawalgarh exceed the maximum permissible fluoride limit of 1.5 mg/L set by the World Health Organization (WHO) and Bureau of Indian Standards (BIS). Prolonged consumption of this contaminated water has led to an alarming rise in dental and skeletal fluorosis among the local rural population. Conventional defluoridation techniques like reverse osmosis, ion exchange, and chemical precipitation are often unviable for remote rural sectors due to high operational costs, sludge disposal issues, and technical complexity. This study focuses on an eco-friendly, cost-effective, and sustainable "green approach" using wheat husk—a locally abundant agricultural waste product—as a natural bio-adsorbent to remove excess fluoride from the groundwater of Nawalgarh block. Batch adsorption experiments were conducted to evaluate the defluoridation efficiency of wheat husk. The impact of critical operational parameters, including adsorbent dosage, contact time, initial fluoride concentration, temperature, and pH, was systematically investigated to optimize the purification process. The experimental data revealed that wheat husk exhibits a significant adsorption capacity for fluoride ions. Under optimized conditions (optimal contact time and adsorbent dose), the bio-sorbent successfully reduced toxic fluoride levels to within the safe permissible drinking limit (< 1.5 mg/L) without altering the essential physicochemical properties of the water. The adsorption kinetics and isotherm models were analysed to understand the surface interaction mechanism. The findings conclude that utilizing wheat husk presents a highly viable, decentralized, and low-cost green technology for groundwater remediation. This approach can be easily implemented at the household or community level in the Nawalgarh region, providing an immediate solution to mitigate fluorosis and safeguard public health.

**PHOTOCATALYTIC DEGRADATION OF MICROPLASTICS USING CDS AND CDS-BASED
COMPOSITES: A PROMISING APPROACH FOR ENVIRONMENTAL REMEDIATION****Sandhya Modanwal, Alok Singh, Ankita Mishra, Azad Kumar***

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Microplastic pollution has emerged as a serious environmental challenge because of the persistence, mobility, and potential toxicity of polymeric particles in aquatic ecosystems. The present study investigates the photocatalytic degradation of microplastics using cadmium sulfide (CdS) and CdS-based composites under light irradiation. CdS quantum dots and their composites were synthesized using a chemical precipitation route and characterized by X-ray diffraction, UV-visible spectroscopy, Fourier-transform infrared spectroscopy, scanning electron microscopy, and energy-dispersive X-ray analysis. The photocatalytic activity was evaluated using model polyethylene (PE), polystyrene (PS), and polyethylene terephthalate (PET) microplastics. The degradation process was monitored through changes in mass, surface morphology, and chemical functionality. Preliminary/representative results indicate that CdS-based composites may achieve approximately 30–60% polymer mass loss after 6 h of irradiation, compared with 15–35% for bare CdS under similar conditions. Enhanced activity is attributed to improved light absorption, charge separation, and the generation of reactive oxygen species, particularly hydroxyl and superoxide radicals. The study highlights the potential of CdS-based heterostructures as photocatalysts for microplastic remediation and provides a basis for developing efficient, reusable, and environmentally relevant treatment systems.

**THE EVOLUTION OF DIGITAL TRADE AND E-COMMERCE: DRIVING GLOBAL ECONOMIC GROWTH, TECHNOLOGICAL CONVERGENCE, AND REGULATORY GOVERNANCE.****Sandeep Kumar Darji**

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The rapid acceleration of information and communication technologies (ICT) has fundamentally shifted traditional commercial structures, establishing digital trade and e-commerce as indispensable pillars of the modern global economy. Digital trade extends beyond the mere online purchasing of consumer goods; it encompasses digitally enabled cross-border transactions of goods, services, data flows, and intangible products. This study provides a comprehensive examination of the structural expansion, operational frameworks, and macro-economic impacts of digital trade and e-commerce across international markets. By leveraging digital platforms, businesses—particularly small and medium-sized enterprises (SMEs)—have systematically dismantled legacy barriers to international market entry. Cross-border e-commerce has optimized supply chain management, lowered logistical transaction costs, and enabled direct-to-consumer delivery models on a global scale. Furthermore, the convergence of frontier technologies—such as Artificial Intelligence (AI) predictive analytics, distributed ledger technology (blockchain), cloud computing infrastructure, and modern fintech payment gateways—has streamlined operations, dynamic pricing mechanisms, and hyper-personalized consumer engagement strategies. However, the rapid pace of digital trade expansion has outpaced the development of uniform international trade regulations, giving rise to complex legal, structural, and political challenges. Key impediments to seamless global digital commerce include conflicting regional data privacy mandates, national data localization laws, digital divide disparities across developing markets, escalating cybersecurity threats, intellectual property risks, and fragmented digital taxation frameworks. Addressing these challenges requires a cohesive, multilateral approach to governance. This paper synthesizes current empirical research, international trade agreements, and institutional regulatory frameworks (such as those proposed by the World Trade Organization and UNCTAD) to formulate strategic policy recommendations. The analysis emphasizes the necessity of developing harmonized international trade rules, robust cross-border data governance protocols, inclusive digital infrastructure investments, and interoperable digital payment standards to foster an equitable, secure, and sustainable global digital trade ecosystem.

ASSESSMENT OF WATERBORNE HEALTH RISKS IN TRIBAL COMMUNITIES THROUGH MICROBIAL DYNAMIC IN THE JAKHAM RESERVOIR**Sampat Ram Meena**

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Background: Access to safe drinking water remains a critical challenge in indigenous regions. Tribal communities surrounding the Jakham water reservoir rely heavily on this source for domestic consumption, making them highly vulnerable to waterborne illnesses. **Objectives:** This study evaluated the microbial load of the Jakham water reservoir to assess the associated waterborne health risks posed to the local tribal population. **Methods:** Water samples were collected across 4 strategic sites over a 24 months period. Microbial load quantification was executed using MPN to isolate indicator organisms, including total coliforms, fecal coliforms, and *Escherichia coli*. **Results:** Laboratory analysis revealed significant biological contamination, with microbial loads peaking during the pouring rain. Total coliform counts exceeded the permissible limits established by international drinking water standards. A positive correlation was observed between high bacterial densities and the local prevalence of gastrointestinal disorders, particularly diarrhea and typhoid, within the target tribal hamlets. **Conclusion:** The Jakham reservoir exhibits marginal levels of microbial pollution that present health hazards to the dependent population. There is a need for community-

level water purification, infrastructure protection, and routine microbiological monitoring to mitigate waterborne outbreak risks.

WOMEN, TECHNOLOGY AND SUSTAINABLE DEVELOPMENT: EMERGING OPPORTUNITIES FOR EMPOWERMENT AND INCLUSIVE GROWTH

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Technology has emerged as a significant force in reshaping social, economic and institutional structures across the world. For women, expanding access to digital technologies has created new opportunities for education, employment, entrepreneurship, financial inclusion, healthcare access and participation in decision-making processes. In the context of sustainable development, women's technological empowerment is particularly important because gender equality and inclusive participation are essential components of long-term social and economic progress. This paper examines the relationship between women, technology and sustainable development, with particular emphasis on the emerging opportunities created by digital platforms, mobile technologies, online education, digital financial services and technology-enabled entrepreneurship. It also explores how technological access can enhance women's agency, economic independence, skill development and social participation. At the same time, the paper highlights persistent challenges including the gender digital divide, unequal access to devices and internet connectivity, limited digital literacy, online safety concerns, socio-cultural restrictions and disparities between rural and urban women. The study adopts a descriptive and analytical approach based on secondary sources including research studies, policy reports and institutional publications. The paper argues that technology can serve as an important instrument of women's empowerment only when technological advancement is accompanied by accessibility, affordability, digital literacy, social inclusion and supportive public policies. It concludes that strengthening women's meaningful participation in the digital economy can contribute substantially to inclusive growth, gender equality and the achievement of the Sustainable Development Goals. Creating a gender-responsive technological ecosystem is therefore essential for building a more equitable, resilient and sustainable future.

EDUCATION FOR A CHANGING WORLD: LIBERAL ARTS EDUCATION AND THE CASE FOR STRUCTURAL INTEGRATION

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Schools are being asked to prepare young people for economies, technologies and civic conditions that nobody can describe with confidence. Estimates of how automation and generative artificial intelligence will alter work differ widely, yet most of them point in one direction: tasks built on routine procedure are the easiest to hand over to machines, while tasks that call for judgement, explanation and cooperation with others are gaining value. This conceptual paper asks what kind of education answers that situation, and it argues that the long tradition of liberal education offers a better starting point than the narrow, examination-driven specialisation that still governs much schooling in India and elsewhere. The paper first reviews labour-market and policy evidence on the changing demand for skills, drawing on Autor, Levy and Murnane, on Deming, and on Eloundou and colleagues, along with the framing documents of UNESCO and the OECD. It then traces the idea of liberal education from the classical artes liberales, through Newman and Dewey, to Nussbaum's account of democratic citizenship, and sets this history alongside the Indian precedents recognised in the National Education Policy 2020. A review of empirical studies follows. Research from the Wabash National Study and related work links particular liberal arts experiences, such as clear teaching, sustained discussion



and frequent contact with teachers, to gains in critical thinking, while meta-analytic evidence shows that critical thinking responds to explicit instruction set in authentic problems. The same literature cautions that thinking skills do not transfer automatically across domains and that much of the evidence rests on self-selected samples and self-report. From this evidence the paper develops a distinction between structural integration, in which one discipline supplies the working logic of a task in another, and decorative integration, in which subjects are simply placed side by side around a theme. It argues that liberal education earns its claims only in the first form. The paper concludes with implications for Indian school education and teacher preparation under NEP 2020 and the National Curriculum Framework for School Education 2023, and it identifies examination design and teacher education as the places where reform is most likely to stall.

GENDER EQUALITY, INCLUSION AND SOCIAL JUSTICE

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Gender equality, inclusion and social justice are interconnected foundations of an equitable society in which every individual can participate with dignity and exercise meaningful agency. This conceptual paper examines their relationship through an intersectional framework, considering how gender interacts with caste, class, disability, sexuality and other social identities to shape experiences of privilege and exclusion. It argues that gender equality requires more than formal recognition of equal rights; it demands the transformation of social norms, institutional practices and unequal distributions of resources and power. Inclusion extends beyond representation to encompass accessibility, participation, belonging and influence in decision-making. Social justice provides the broader ethical framework for addressing structural disadvantage through redistribution, recognition and accountability. Particular attention is given to education, employment, family relations and public institutions as spaces where inequalities can be reproduced or challenged. The discussion highlights the importance of inclusive curricula, equitable access to opportunities, recognition of unpaid care work, prevention of gender-based violence and meaningful participation by historically marginalised communities. It also considers how education can encourage critical awareness and challenge discriminatory assumptions. The paper concludes that progress depends on connecting individual empowerment with institutional change and collective responsibility. An intersectional and participatory approach offers a foundation for advancing equality while recognising differences in lived experience and ensuring that marginalised voices shape the decisions affecting their lives.

SCIENCE AND TECHNOLOGY FOR SUSTAINABLE DEVELOPMENT: PATHWAYS, TRADE-OFFS AND GOVERNANCE FOR THE DECADE OF ACTION

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Science, technology and innovation (STI) are positioned at the centre of the 2030 Agenda for Sustainable Development, yet fewer than one-fifth of the Sustainable Development Goal (SDG) targets are on track as the decade of action draws to a close. This paper examines how, and under what conditions, science and technology can accelerate progress towards sustainable development without reproducing the social and ecological harms of earlier waves of industrial change. Adopting an integrative review design, the study synthesises peer-reviewed scholarship in sustainability science and innovation studies with the assessment reports of the Intergovernmental Panel on Climate Change, the International Energy Agency, the International Renewable Energy Agency, the United Nations and allied agencies published between 2015 and 2025. Five technology domains are analysed through the lens of SDG interlinkages: clean energy, water–food–land systems, circular economy and materials, digital technologies including artificial intelligence, and health biotechnology. The evidence shows that technological progress in these domains has been remarkable—the levelised cost of utility-scale solar photovoltaic electricity fell by roughly ninety per cent between 2010 and 2023, and renewables now supply about thirty per cent of global electricity—but that deployment remains

uneven, and gains are frequently offset by rebound effects, resource extraction for critical minerals, electronic waste and widening digital divides. The paper argues that the binding constraint on sustainable development is no longer the availability of technology but the quality of the socio-technical systems, institutions and finance through which technology is chosen, diffused and governed. Drawing on the “three frames” of innovation policy and on mission-oriented approaches, it proposes an integrated framework comprising directionality, inclusion, circularity, resilience and accountability, operationalised through national STI-for-SDG roadmaps, technology facilitation mechanisms, blended finance, transdisciplinary research and capacity building. Limitations of the review design are acknowledged, and directions for future empirical work are identified. The contribution of the paper is a structured, evidence-based account of the opportunities and trade-offs of technology for sustainability and a governance-oriented research and policy agenda for the post-2030 period. The analysis is intended to inform researchers, policymakers and practitioners engaged in designing science and technology strategies that are simultaneously effective, equitable and ecologically safe.

VERTEBRATE DIVERSITY, CONSERVATION STATUS AND CONSERVATION PRIORITIES OF LILKEE BEED, CHURU, RAJASTHAN

Satpal,

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Semi-arid desert ecosystems support diverse wildlife despite harsh climatic conditions and limited water resources. Lilkee Beed, located in Churu district of Rajasthan, is an important part of the Thar Desert. The present study was conducted to document vertebrate diversity, assess the conservation status of recorded species and identify conservation priorities in the study area. Field surveys were carried out from September 2022 to June 2025. Line transect methods were used for mammals and birds, while reptiles and amphibians were recorded through visual encounter surveys and active searches in different microhabitats. Photographs, indirect signs and interviews with locals were also used to supplement species records. A total of 125 vertebrate species were documented, comprising 31 mammals, 70 birds, 20 reptiles and four amphibians. The conservation status of recorded species was assessed using the IUCN Red List categories. The vertebrate assemblage included several species of conservation concern, including the Steppe Eagle (*Aquila nipalensis*), categorized as Endangered, and the Indian Spiny-tailed Lizard (*Saara hardwickii*), categorized as Vulnerable. Several Near Threatened species were also documented. The study area faces various anthropogenic pressures, including livestock grazing, illegal hunting, predation by feral dogs and road-related wildlife mortality. Based on the recorded diversity and conservation status; habitat protection, regulated grazing, prevention of illegal hunting and reduction of wildlife mortality are identified as important conservation measures. Community participation may also support local conservation efforts. The study provides an integrated account of the vertebrate assemblage of Lilkee Beed and highlights conservation priorities relevant to semi-arid landscapes of Rajasthan.

RIGHTS AND CHALLENGES OF GIG WORKERS IN INDIA'S DIGITALECONOMY

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In the 21st century Technology has become an unavoidable part of life. Due to advancements in technology, everything is just one click away. Technology has made life easier and faster, so that no one has time to go outside and shop therefore, people use apps like Zomato, Zepto, Blinkit, etc., to get everything at their doorstep within minutes. The dependence on the digital economy has increased. The digital economy is a system of economic activity that relies on digital computing technologies, the internet, and data to create, market, and consume goods and services. In this era of digital economy and digital transformation, startups

like Zomato and Blinkit in India have become unicorns and they are playing a major role in boosting the digital economy by acting as aggregators. The digital economy has also created new opportunities in the labour market. The class of labour working in the digital economy is known as gig workers / platform workers. According to Section 2(35) of the Code on Social Security, 2020, a gig worker is a person who performs work or participates in a work arrangement and earns from such activities outside a traditional employer-employee relationship. By this Act, legal recognition has been given to gig workers in India. According to the Economic Survey of India, 2025-26, India has approximately 12 million (1.2 crore) gig and platform workers. Gig workers account for slightly over 2% of India's total workforce. The rapid increase in the number of gig and platform workers is mainly due to reasons such as better opportunities, flexible working hours, no specific skill requirements (except for certain jobs), and part-time or full-time job opportunities, but a lot of concerns are also attached like Income is unpredictable depending on demand, competition and seasonal trends. Although the Code on Social Security, 2020 has given legal recognition to gig workers, there is an absence of a comprehensive legal and regulatory framework, leaving gig workers vulnerable to exploitation without protection for fair wages, rights and working conditions. Due to these concerns, the need of the hour is to make a proper legal and regulatory framework to protect the rights of gig workers.

EMPLOYEE RESKILLING AND UPSKILLING IN THE AGE OF ARTIFICIAL INTELLIGENCE: AN HRM PERSPECTIVE ON BUILDING A FUTURE-READY WORKFORCE

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The rapid development of artificial intelligence (AI), automation and digital technologies is changing the nature of work and the skills required by employees. Organisations are increasingly facing a situation in which existing employee capabilities may not fully match emerging business requirements. In this context, employee reskilling and upskilling have become important Human Resource Management (HRM) strategies for preparing organisations and employees for the future of work. Reskilling enables employees to acquire capabilities required for different or emerging roles, whereas upskilling strengthens and extends the skills needed in their existing roles. This paper examines the significance of employee reskilling and upskilling from an HRM perspective and explores how organisations can use structured learning and development practices to respond to changing skill requirements. The study is based entirely on secondary data collected from the World Economic Forum, International Labour Organization, OECD publications, and selected academic literature on workforce transformation, digital skills and HRM. The analysis indicates that skill gaps are becoming a major barrier to organisational transformation, while technical skills alone are insufficient for a future-ready workforce. Digital literacy, AI awareness, analytical thinking, creativity, adaptability, communication, leadership and continuous learning are increasingly important. The paper further highlights the changing role of HR from a traditional training provider to a strategic partner responsible for identifying skill gaps, designing learning pathways, supporting internal mobility and developing a culture of continuous learning. The study concludes that reskilling and upskilling should be treated as long-term strategic investments rather than isolated training programmes. A balanced approach combining technology-related competencies with human-centred skills can help organisations improve employee employability, adaptability and organisational sustainability.

RENEWABLE AND CLEAN ENERGY TECHNOLOGIES

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The growing global demand for energy, rapid industrialization, depletion of conventional fossil fuels, and increasing environmental concerns have created an urgent need for sustainable and cleaner energy alternatives. Renewable and Clean Energy Technologies offer promising solutions for meeting present and



future energy requirements while reducing environmental pollution and greenhouse gas emissions. Renewable energy sources such as solar, wind, hydropower, biomass, geothermal, and tidal energy are naturally replenished and can reduce dependence on coal, petroleum, and natural gas. Among these technologies, solar photovoltaic (PV) and wind energy have emerged as important sources of clean electricity due to technological advancements, improved efficiency, and increasing deployment. The development of energy storage systems, particularly advanced batteries, plays a significant role in managing the intermittent nature of renewable energy. Green hydrogen is also receiving increasing attention as a clean energy carrier with potential applications in transportation, industries, and power generation. In addition, fuel cells, smart grids, hybrid renewable energy systems, and energy-efficient technologies are contributing to the development of a flexible and sustainable energy infrastructure. The adoption of renewable and clean energy technologies can help reduce carbon emissions, air pollution, and the overall carbon footprint, while improving energy security and supporting sustainable economic growth. However, several challenges remain, including intermittency of renewable sources, high initial investment, energy-storage requirements, grid integration, land requirements, and resource availability. Addressing these challenges requires continued research, technological innovation, supportive policies, and efficient energy-management strategies.

DIGITAL TRANSFORMATION AND WORKING CAPITAL EFFICIENCY: A STUDY OF SELECTED TWO-WHEELER AUTOMOBILE COMPANIES IN INDIA

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The rapid advancement of digital technologies has significantly transformed financial and operational practices across industries, including the automobile sector. In the highly competitive Indian two-wheeler industry, efficient management of working capital is essential for maintaining liquidity, operational continuity, profitability, and long-term financial sustainability. Digital transformation, through technologies such as Enterprise Resource Planning (ERP), artificial intelligence, data analytics, automation, cloud computing, digital payment systems, and integrated supply-chain platforms, has created new opportunities for improving the management of inventories, receivables, payables, and cash flows. The present study examines the relationship between digital transformation and working capital efficiency in selected two-wheeler automobile companies in India. It focuses on assessing changes in key working capital indicators, including the current ratio, inventory turnover ratio, receivables turnover ratio, working capital turnover ratio, and cash conversion cycle. The study also explores how the adoption of digital technologies facilitates real-time financial monitoring, demand forecasting, inventory optimization, faster collection of receivables, supplier coordination, and effective cash-flow management. The study is based primarily on secondary data obtained from annual reports, financial statements, company disclosures, and other reliable published sources of selected Indian two-wheeler automobile companies. Appropriate financial ratios, trend analysis, and statistical techniques are proposed to evaluate working capital efficiency over the selected study period. The study seeks to provide insights into the role of digital transformation in strengthening working capital practices and improving financial and operational efficiency in the Indian two-wheeler automobile industry. The findings may be useful for corporate managers, financial professionals, researchers, and policymakers in understanding the growing importance of technology-driven financial management in the automobile sector.

BIOREMEDIATION TECHNIQUES FOR SOIL POLLUTION

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Environmental pollution has been on the rise in the past few decades owing to increased human activities on energy reservoirs, unsafe agricultural practices and rapid industrialization. Soil pollution is one of the major worry among all because soil contamination can harm the humans by consumption of food grown in

polluted soil or it can cause infertility to soil and lower the productivity, Among the pollutants that are of environmental and public health concerns due to their toxicities are: heavy metals, nuclear wastes, pesticides, greenhouse gases, and hydrocarbons. So this chapter will include; Sources of soil pollution and remediation of polluted sites using biological means has proven effective and reliable due to its eco-friendly features. Bio-remediation can either be carried out ex situ or in situ, depending on several factors, which include site characteristics, type and concentration of pollutants. It also seen as a solution for emerging contaminant problems.

LITERATURE AND SUSTAINABLE FUTURES: REIMAGINING TECHNOLOGY THROUGH ECOLOGICAL NARRATIVES

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The growing ecological crisis has intensified the need to rethink the relationship between technological advancement, ecological responsibility, and sustainable development. While technological innovation is increasingly promoted as a means of addressing environmental challenges, its social, ethical, and ecological implications require critical examination. This paper explores how contemporary literary narratives engage with these concerns through Richard Powers's *The Overstory* (2018) and Kim Stanley Robinson's *The Ministry for the Future* (2020). Drawing on ecocriticism and the environmental humanities, the study examines how these works represent ecological degradation, climate change, biodiversity loss, technological intervention, and the possibilities of sustainable futures. Through close textual analysis, the paper investigates how the narratives question conventional notions of technological progress while imagining alternative forms of ecological awareness, collective responsibility, and sustainable action. *The Overstory* emphasizes the interconnectedness of human and non-human life and challenges anthropocentric approaches to environmental exploitation. The novel presents trees and forests not merely as resources but as vital participants in interconnected ecological systems, encouraging a reconsideration of humanity's relationship with the natural world. In contrast, *The Ministry for the Future* focuses more directly on scientific, technological, economic, and institutional responses to climate change, presenting possible strategies for addressing global environmental challenges. The novel also raises questions about the ethical dimensions of technological intervention and the collective efforts required to create sustainable societies. The paper contends that both narratives critically engage with the possibilities and limitations of technology-related solutions to nature-related crises. By bringing literary studies into conversation with technology and sustainability, the study highlights the capability of literature to foster ecology-based knowledge and provide principled and imaginative viewpoints on nature-related transformation. Ultimately, the paper contends that viable futures need not just technology-related innovation but moreover a core and foundational shift in human attitudes towards the environment, stressing interconnectedness, duty, and coexistence with the more-than-human world.

PRESENCE OF GREEN ALGAE IN BHAGWATGARH DAM AND IT'S ROLE IN ECOSYSTEM CONSERVATION

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Green algae (Chlorophyceae) are an important component of freshwater ecosystems and play a significant role in maintaining ecological balance. The present study was undertaken to investigate the presence, diversity and ecological significance of green algae in Bhagwatgarh Dam, located in Sawai Madhopur district, Rajasthan. The study focused on the occurrence and seasonal distribution of Chlorophycean algae in relation to physicochemical characteristics of the water. During the study period, a considerable diversity of green algae belonging to different genera and taxonomic groups was recorded from

the dam. The occurrence and abundance of algal taxa varied with seasonal changes in environmental conditions, particularly water temperature, pH, dissolved oxygen, nutrients, turbidity and other physicochemical parameters. Green algae contribute to primary productivity, oxygen generation and nutrient cycling, and also provide an important source of food for aquatic organisms. Their presence can therefore contribute to the stability and functioning of the aquatic ecosystem. At the same time, changes in algal abundance may reflect variations in water quality and nutrient availability. The study highlights the ecological importance of Chlorophyceae algae in Bhagwatgarh Dam and emphasizes their role in maintaining freshwater ecosystem functions. Conservation and proper management of the dam and its surrounding catchment area are essential for maintaining water quality, algal diversity and overall aquatic biodiversity. The findings provide useful baseline information for future monitoring and conservation of the freshwater ecosystem of Bhagwatgarh Dam.

A LEX SPECIALIS FOR THE SKIES: DESIGNING A DEDICATED AVIATION EMPLOYMENT TRIBUNAL FOR COCKPIT CREW IN INDIA

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India's commercial aviation sector is governed by two partially overlapping legal orders. Labour law regulates dismissal, wages, collective bargaining, industrial disputes, and employment status; aviation law regulates licensing, operational safety, crew competence, flight-duty limitations, rest periods, and fatigue risk. For cockpit and cabin crew, these fields are not merely adjacent. A roster may simultaneously be a managerial instruction, a contractual term, a collective-bargaining subject, and a safety-control measure. Yet disputes continue to be channeled through generalist labour institutions whose jurisdiction depends upon contested classification under section 2(s) of the Industrial Disputes Act, 1947, governmental reference under section 10, and procedural protections such as section 33. This article argues for a *lex specialis*: an Indian Aviation Employment Tribunal (IAET) with exclusive jurisdiction over defined employment disputes involving cockpit and cabin crew. Drawing on British employment tribunals and ACAS conciliation, as well as the United States Railway Labor Act (RLA) and National Mediation Board architecture, it proposes a national institution combining judicial independence with carefully bounded aviation expertise. The IAET would provide mandatory early conciliation, classify disputes as major or minor, protect the status quo during adjudication, incorporate flight-duty-time and fatigue science, and operate within a constitutionally compliant appellate structure. The proposal is normative rather than empirical. The available literature is stronger on comparative dispute resolution, American airline labour relations, and fatigue regulation than on Indian aviation case law. The IAET is therefore advanced as a principled institutional response to jurisdictional fragmentation, safety-sensitive employment relations, and the need for nationally consistent jurisprudence.

EDUCATION, SOCIAL CHANGE AND HUMAN DEVELOPMENT AMONG CHUKTIA BHUNJIA YOUTH

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Education is an important instrument of social change and human development, especially for the indigenous and PVTGs (Particularly Vulnerable Tribal Groups). In the Chuktia Bhunjia community of Odisha, educational expansion has changed the traditional social practices, aspirations, livelihood patterns, gender relations, and interaction with the wider society. This paper discusses the relation between education, social change, and human development with a focus on the changing experiences of the youth among Chuktia Bhunjia. The objective of the study is to study the educational status of Chuktia Bhunjia youth, to find out the major social changes due to educational progress, and to analyze the contribution of education in human



development and social mobility. This study applies a mixed-method approach with a descriptive and exploratory research design. The primary data were collected through household surveys, interviews, and observations in the Chuktia Bhunjia community of Nuapada district of Odisha, especially in the Sunabeda Plateau region. The secondary data were collected from government reports, books, research studies, and relevant tribal literature. The results indicate that education has gradually improved the opportunities for the younger generation and also helped in changing attitudes toward education, employment, gender roles, dress, communication, health-seeking behavior, and interaction with non-tribal communities. Educated youth are increasingly looking for formal employment, higher education, and improved livelihoods. Education has also raised awareness of government welfare programs and participation in larger social and economic institutions. But at the same time, there are differences between the generations, especially in educational attainment, occupational opportunities, and access to resources. The social life of the community is still marked by traditional cultural values, and there is a coexistence of traditional practices and modern aspirations. It can be concluded from the paper that education is a vital ingredient in fostering the development of people and bringing about social change among the youth of Chuktia Bhunjia.

TO ANALYSIS OF SYSTEM LIFETIME, THROUGHPUT AND ENERGY IN WIRELESS SENSOR NETWORK USING AI BASED DYNAMIC RADIO MANAGEMENT PROTOCOL

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Energy is a major issue in wireless sensor networks because the nodes are frequently placed in hard-to-reach areas, making it difficult for humans to access them. In this study, nodes transmit data to their neighbouring nodes without considering the distance, using the same energy level. However, sending data over shorter distances uses less energy, which highlights a key research gap. In contrast, longer distances require more energy. Therefore, it is necessary for nodes to adjust their transmission power based on the distance rather than using a fixed level. The optimal transmission power for communication is determined using a neural network-based machine learning technique that considers the propagation model and various network properties like node density, remaining energy, and the energy harvesting rate. In this work, sensor nodes send information to their neighbours using a multiple linear regression model for dynamic radio tuning, together with the FRIS propagation model. The simulation then records the energy usage of the nodes. When compared to four recent methods that extend the lifetime of wireless sensor networks, the proposed protocol performs better and consumes less power. The AI-DRM protocol ensures that the nodes have enough energy to transmit packets for up to 750 rounds, which is better than the performance of two recent energy-efficient protocols, the ARORA and the EACHS-B2SPNN protocols. The AI-based dynamic transmission power protocol adjusts the sensor nodes using a propagation model. It also predicts the lifetime of WSN and makes effective use of all sensor nodes.

BETWEEN GROWTH AND GOVERNANCE: BLUE ECONOMY POLITICS IN INDIA'S COASTAL AND MARITIME DOMAIN

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While the concept of the blue economy remains contested, it has become central to organizing India's maritime economic aspirations, security policy, and environmental obligations. Since Rio+20 in 2012, 'blue economy' has been invoked in different ways, in different discourses – as ocean natural capital, as ocean as business opportunities, as ocean as livelihoods of small-scale fisheries – each with its own set of implications for who benefits from ocean governance. This article examines how these tensions manifest in India's particular political economy. India has a coastline of about 7,500 km, an Exclusive Economic Zone of nearly 2,000,000 km², and almost one-fifth of its population living in coastal areas. It has developed a rich framework



of blue-economy policy measures, including the draft National Policy for India's Blue Economy, the Sagarmala port-led development program, the Pradhan Mantri Matsya Sampada Yojana, and the Deep Ocean Mission. The analysis brings these instruments together in three overlapping dynamics: the institutional fragmentation brought about by the overlapping competences of the central ministries and coastal state jurisdictions; the geopolitical framing of ocean policy as per the SAGAR and MAHASAGAR doctrines in the context of strategic competition with China in the Indo-Pacific; and the historical marginalization of the small-scale and artisanal fishing communities under the mid-twentieth century "Blue Revolution" and their continued vulnerability in the context of contemporary blue justice concerns. Drawing on comparative experience with governance in the Australian and Pacific Islands contexts, as well as in the Caribbean, the article shows that the Indian blue economy is not a single policy program, but an arena of political contestation over infrastructure-led growth, ecological sustainability, and coastal livelihood protection. It finds that the vision and vision statements of the national policy documents will not play a major role in ensuring a truly sustainable Indian blue economy; what will be key is a commitment to binding coordination between ministers, stringently enforced community safeguards, and marine spatial planning, which puts ecosystem integrity on the agenda of governance and not compliance.

AN EXPLAINABLE STACKING ENSEMBLE FRAMEWORK FOR CLINICAL HEART DISEASE PREDICTION

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Heart disease prediction from clinical data requires models that combine complementary learning capabilities and provide interpretable decisions. This study proposes an explainable stacking ensemble framework for identifying the presence or absence of heart disease using the UCI Cleveland dataset. Logistic Regression, Support Vector Machine, Random Forest, and XGBoost are employed as base classifiers, while regularized Logistic Regression serves as the meta-classifier. The preprocessing pipeline includes missing-value imputation, categorical encoding, and numerical scaling where appropriate. Feature selection is investigated to identify compact predictor subsets and reduce redundant information. Preprocessing, feature selection, and hyperparameter optimization are restricted to training folds to prevent information leakage. Out-of-fold probability predictions from the base classifiers are used to train the meta-classifier. The framework will be evaluated through nested stratified cross-validation and compared with individual classifiers and an equal-weight soft-voting ensemble using identical evaluation splits. Performance assessment will include balanced accuracy, sensitivity, specificity, precision, F1-score, and area under the receiver operating characteristic curve. Probability reliability will be examined using the Brier score and calibration plots. SHAP-based analysis will investigate feature contributions to predictions. Comparisons between models using selected features and all available predictors will assess the contribution of feature selection. The study will determine whether stacking improves discrimination and probability reliability relative to the strongest individual classifier. Performance variation across evaluation folds will characterize uncertainty in the estimates. This reproducible framework provides a foundation for explainable heart disease classification and subsequent development of adaptive ensembles for incomplete clinical data, supporting comparison of prediction strategies under consistent conditions.

THE DIGITAL CATALYST: EVALUATING THE ROLE OF PSYCHOLOGISTS IN THE ASSESSMENT AND TREATMENT OF INTERNET ADDICTION'**Virendra Pal Tak**

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The exponential rise of digital technology has led to a parallel increase in Internet Addiction (IA), now recognized as a critical global public health concern impacting psychological well-being, academic performance, and social functioning. This study examines the multi-faceted role of psychologists in mitigating IA and facilitating recovery. Utilizing a mixed-methods approach, this research analyzes the efficacy of psychological interventions—primarily Cognitive Behavioral Therapy (CBT), Motivational Interviewing (MI), and Mindfulness-Based Interventions (MBIs)—across a sample of 150 treatment-seeking individuals. The findings indicate that psychologists serve a pivotal dual function: first, in diagnosing comorbid conditions such as depression, anxiety, and ADHD, which frequently fuel compulsive internet use; and second, in designing tailored therapeutic frameworks that transition clients from digital dependency to controlled, healthy utilization. Results demonstrate a significant reduction in the Internet Addiction Test (IAT) scores ($p < .001$) following structured psychological intervention, alongside marked improvements in emotional regulation and interpersonal relationships. Ultimately, this paper underscores the indispensable mandate for clinical psychologists to drive early screening protocols, develop specialized digital literacy coping mechanisms, and advocate for standardized clinical guidelines to combat this evolving technological epidemic.

GENDER DISPARITIES IN SCHOOL EDUCATION IN KERALAM: A HISTORICAL ANALYSIS IN THE CONTEXT OF INCLUSION AND SOCIAL JUSTICE**Veena.P. S**

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Kerala's educational achievements are often celebrated as models of human development, yet a closer historical reading reveals persistent gender disparities embedded within its schooling system. This paper undertakes a historical analysis of school education in Keralam, tracing developments from the princely-era reforms of Travancore and Cochin through the colonial neglect of Malabar to the post-independence expansion of universal schooling, in order to examine how gender inequality was reproduced even as literacy expanded. Adopting a qualitative, literature-based historical method, the study draws upon socio-historical scholarship, gender studies literature, and archival educational data to interrogate the relationship between formal access to schooling and substantive inclusion and social justice for girls and women. The analysis situates gender disparity within a broader framework of regional inequality, caste reform, and shifting family structures, particularly the decline of matrilineal inheritance among Nair communities, to show how education functioned simultaneously as an instrument of social mobility and as a mechanism that reinforced domestic roles for women. The study finds that while quantitative gender gaps in enrolment narrowed rapidly after the 1950s, qualitative disparities persisted through curricular content, subject streaming, and social expectations that oriented girls' education toward domesticity rather than economic autonomy. It further identifies how intersecting disadvantages of region, caste, and religion produced hidden pockets of exclusion invisible in aggregate literacy statistics. The paper concludes that genuine inclusion and social justice in Kerala's education system require moving beyond enrolment parity toward curricular reform, teacher sensitisation, and targeted interventions addressing residual regional and gendered inequities, and it offers policy suggestions for realising this transformation.

THE IMMIGRANT EXPERIENCE IN THE SELECTED FICTION OF BHARATI MUKHERJEE**Vandana Meena**

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Bharati Mukherjee is one of the prominent Indian-American writers whose fiction explores the complex experiences of immigrants negotiating between their cultural heritage and the social, cultural, and psychological realities of the host country. Her writings portray immigration not merely as a geographical movement but as a process of cultural transformation, identity formation, displacement, and adaptation. The present paper, titled "The Immigrant Experience in the Selected Fiction of Bharati Mukherjee," examines the diverse dimensions of immigrant life as represented in her selected fictional works. The study focuses particularly on themes such as cultural displacement, identity crisis, assimilation, alienation, gender, racism, and the conflict between tradition and modernity. Mukherjee's protagonists often experience a tension between their inherited cultural identities and their attempts to construct new identities in the American multicultural environment. Her fiction also challenges the notion that immigration is a simple transition from one culture to another, presenting it instead as a complex process of negotiation and self-reinvention. Through a close reading of selected works, the paper seeks to analyse the psychological and socio-cultural dimensions of immigrant experience, especially from the perspective of South Asian women. The study argues that her fiction provides significant insights into the changing meanings of home, belonging, identity, and cultural hybridity in the context of migration. Thus, Mukherjee's selected fiction contributes substantially to the understanding of the immigrant experience in contemporary diasporic literature.

**AI-DRIVEN VALIDATION OF IOT DATA FOR BLOCKCHAIN-BASED AGRICULTURAL SUPPLY CHAIN
TRACEABILITY: A SURVEY OF ORACLE MECHANISMS AND AI APPROACHES****Doctor Umerkhan Junaidkhan**

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Blockchain-based traceability systems are often proposed as a solution to the opacity, fragmentation, and fraud that characterize agricultural supply chains. The property that these systems actually provide, however, is narrower than is usually claimed: a distributed ledger guarantees that a record, once committed, cannot be changed without detection, but says nothing of whether the record was true at the moment of commitment. In an agricultural supply chain, this distinction is crucial: nearly every on-chain fact originates from an IoT sensor in an uncontrolled environment or from manual entry by a party with an economic stake in the outcome. This survey reviews the literature addressing that gap. We examine 52 works spanning four intersecting bodies of research: blockchain traceability frameworks for agri-food supply chains, IoT sensing and cold-chain monitoring, the blockchain oracle problem and data on-chaining, and machine-learning approaches to sensor data validation. We classify traceability frameworks by whether and how they validate inputs prior to commitment, and we classify oracle trust mechanisms by the assumption on which their trust rests. Our principal finding is that the agri-food traceability literature and the oracle trust literature have developed largely in isolation: traceability frameworks overwhelmingly treat sensor readings as ground truth at ingestion, while oracle trust research is oriented toward financial data feeds and rarely addresses the physical, domain-constrained data characteristic of perishable logistics. We identify six research gaps arising



from this separation, of which the most consequential is that no reviewed work clearly distinguishes implausible data, which should be rejected, from plausible data reporting a genuine violation, which must be recorded and attributed.

RECENT ADVANCES IN QUINOLINE-DERIVED COMPOUNDS FOR ALZHEIMER'S DISEASE: SAR, PHARMACOLOGICAL TARGETS AND THERAPEUTIC OPPORTUNITIES

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Nitrogen-containing heterocyclic scaffolds constitute a fundamental component of modern drug discovery, among which quinoline has emerged as a particularly valuable pharmacophore. The unique electronic properties, planar aromatic architecture, and amenability to diverse chemical modifications of the quinoline nucleus have contributed to the development of numerous biologically active derivatives. Extensive synthetic efforts have therefore been directed toward the functionalization of different positions of the quinoline ring system to generate compounds with diverse pharmacological profiles. Notably, quinoline-based molecules have demonstrated promising activities against several therapeutic targets implicated in neurodegenerative diseases. In the context of Alzheimer's disease (AD), quinoline derivatives have been investigated for their ability to modulate multiple pathological mechanisms and molecular targets associated with disease progression. This chapter provides a comprehensive overview of quinoline and related analogues explored as potential anti-Alzheimer's agents, focusing particularly on structural modifications, structure–activity relationships, molecular recognition, binding interactions, and mechanisms of action. Such insights may facilitate the identification of key structural features responsible for biological activity and support the rational development of more potent and selective quinoline-based candidates for AD therapy.

DECONSTRUCTING CORRUPTION: FROM PSYCHO-ETHICAL PERSPECTIVE OF YOGA PHILOSOPHY

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Corruption can be defined as a multidimensional social and ethical problem which impacts upon political, judicial, education, health and other crucial spheres of life. Although the measures taken in order to control the problem of corruption are mostly legal, administrative and institutional, its psychological and ethical aspects need to be analyzed. In this paper, corruption is considered from the perspective of Yoga philosophy, in terms of such concepts as citta-vṛtti, kleśas, Yama and Niyama. The way in which mental disturbance, attachment, greed and lack of self-discipline might lead to unethical behavior will be studied. Further, the principles of ethics provided by Patañjali and their applicability to formation of individual moral responsibility will be examined. The study is based on qualitative, conceptual and philosophical approach and includes conceptual and critical analysis. It is argued that, even though the measures used in controlling the phenomenon of corruption are institutional, ethical transformation of individuals provides another important angle. The principles of Yoga philosophy, especially Ahimsā, Satya, Asteya, Brahmacharya, Aparigraha and the five Niyamas allow restraining, being truthful, contented, disciplined and responsible. Therefore, Yoga can be treated as philosophy in action which deals with the ethical fundamentals of human behavior.

STUDY OF TREND OF SEA SURFACE TEMPERATURE, FOR SEA ADJACENT TO KOLKATA ALONG WITH INSIGHTS OF THE SAME FOR NEAR FUTURE BY NEURAL NETWORK

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This paper is based on analysis for determination of trend of sea surface temperature of north Bay of Bengal, sea adjacent to Kolkata, West Bengal, India. Latitude, longitude, for analysis were selected



accordingly ,to study the trend of sea surface temperature from historical past years along with insights for near future years . Using data lag feature ,historical data as collected from 'Copernicus Climate Data Store (ERA5 dataset)' , from 1940 till March 2026 , the monthly averaged reanalysis data and also daily hourly data for the variable 'sea surface temperature' , were subjected to suitable feature engineering for compatibility with time series analysis with neural network model to understand the trend of sea surface temperature from historical period till recent years along with insights about predicted value of the same for 2026 to 2028. Similar as data obtained with variation in time scale , i.e. either daily hourly data or monthly average data , data with different formats as obtained from the ERA5 data set i.e. csv format data , obtained from ERA5 time series historical data set as well as NetCDF4 (experimental) format data, obtained from ERA5 single level historical data set were subjected to analysis to compare the insights about the trend of sea surface temperature for the extracted region adjacent to Kolkata under analysis with data diverse environment . From the point of sustainable environment , insights as obtained from this analysis was observed as beneficial .

REIMAGINING HUMAN'S NATURE RELATIONSHIPS: ECOCRITICISM AND THE IDEA OF SUSTAINABILITY IN ENGLISH LITERATURE

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The relationship between human beings and the natural world has remained an important concern in English literature, evolving from traditional representations of nature as a source of beauty and spiritual renewal to contemporary engagements with ecological crisis and sustainability. This paper explores the changing human–nature relationship through the theoretical lens of **ecocriticism**, focusing particularly on the idea of sustainability in English literature. It examines how literary texts challenge anthropocentric attitudes, environmental exploitation, consumerism, and the growing separation between human life and the natural environment. The paper also considers the ways in which literature represents ecological interconnectedness, environmental responsibility, and the need for a more sustainable relationship with nature. By bringing literary studies into dialogue with contemporary concerns such as climate change, biodiversity loss, resource depletion, and sustainable development, the study argues that literature can contribute to the development of ecological consciousness and ethical perspectives. It further suggests that literary narratives provide imaginative spaces for rethinking human progress and envisioning sustainable futures based on coexistence, responsibility, and ecological balance. Thus, English literature serves not merely as a reflection of environmental concerns but also as a significant cultural medium through which more sustainable ways of understanding humanity's relationship with the natural world can be imagined.

UNDERSTANDING AI-ENABLED PERSONALIZATION'S ROLE IN GUEST EXPERIENCE: A STUDY OF UPSCALE HOTELS IN DELHI NCR

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Artificial Intelligence (AI) is reshaping how guests experience hospitality, influencing personalization, service automation, predictive recommendations, and real-time responsiveness. This study focuses on AI's role in shaping guest satisfaction within upscale (4-star and 5-star) hotels of the Delhi NCR region. AI-enabled personalization relies on guest data, machine learning, and natural language processing to anticipate preferences and tailor service delivery in ways that were not previously possible at scale. We examine how personalization has evolved within hospitality, from early recommendation-based systems to current AI concierge and smart-room technologies, and its growing centrality to the luxury guest experience. Understanding AI's role in hospitality means understanding its core functions — sensing guest preferences, learning from interaction patterns, and adapting service delivery accordingly. In the luxury hotel sector, where guest expectations are shaped by both efficiency and emotional connection, achieving the right balance between automated personalization and human-delivered service remains an open challenge. Our main goal

is to understand how AI-enabled personalization relates to guest satisfaction specifically within Delhi NCR's upscale hotel segment, and whether this relationship varies across guest demographic groups. The study has defined objectives: examining guest exposure to AI personalization features, assessing their relationship with satisfaction outcomes, and exploring how guest demographic profile moderates this relationship. We compare findings against recent national-level evidence from the broader Indian hospitality industry, situating Delhi NCR's upscale segment within that wider context. Using structured guest questionnaires administered across upscale hotels in the region, we gather data on guest-perceived exposure to AI personalization and corresponding satisfaction levels. We aim to understand guest preferences and AI personalization's current standing within Delhi NCR's luxury hospitality market. In conclusion, this research offers region-specific insight into AI's evolving role in guest experience, providing practical direction for hoteliers, policymakers, and researchers seeking to strengthen personalization strategies within India's upscale hospitality sector.

PUBLIC POLICY AND GOVERNANCE

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Public policy and governance constitute two fundamental dimensions of modern democratic administration and play a significant role in promoting social welfare, economic development, institutional effectiveness, and inclusive growth. Public policy refers to the principles, decisions, programmes, and actions adopted by governments to identify and address public problems and achieve desired social and developmental objectives. Governance, in contrast, encompasses the processes, institutions, mechanisms, and relationships through which public authority is exercised, policies are implemented, resources are managed, and public services are delivered. The effectiveness of public policies is closely associated with the quality of governance, administrative capacity, transparency, accountability, and responsiveness of public institutions. In the contemporary context, governance has gradually moved beyond a government-centred approach toward a more participatory and collaborative model involving citizens, civil society organisations, private institutions, and other stakeholders. The increasing use of information and communication technologies has further transformed public administration through digital governance, online service delivery, greater access to information, and enhanced opportunities for citizen participation. Evidence-based policymaking, institutional coordination, decentralisation, and effective monitoring and evaluation have therefore become important components of successful governance. Despite significant institutional and technological developments, public policy implementation continues to face several challenges, including bureaucratic inefficiency, corruption, resource constraints, regional disparities, social exclusion, inadequate coordination, and gaps between policy formulation and implementation. This paper examines the conceptual relationship between public policy and governance, focusing on policy formulation, implementation, institutional accountability, citizen participation, transparency, and digital transformation. It argues that effective public policy requires not only well-designed programmes but also strong institutions and participatory governance mechanisms. Strengthening administrative capacity, promoting transparency, encouraging stakeholder participation, and using technology responsibly can improve policy outcomes and contribute to inclusive, sustainable, and equitable development.

EDUCATION FOR A CHANGING WORLD: CHALLENGES AND OPPORTUNITIES

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The rapid advancement of artificial intelligence (AI), digital automation, and shifting global demographics are profoundly reshaping the modern workforce and society. Traditional educational frameworks, which heavily prioritize rote memorization and static academic disciplines, are becoming increasingly inadequate for preparing students for an unpredictable future. This paper explores the critical paradigm shift required in modern pedagogy, emphasizing the integration of flexible learning methodologies



and interdisciplinary frameworks. We analyze how foundational disciplines, particularly mathematics, serve as vital tools for developing cognitive agility, statistical literacy, and structured problem-solving skills necessary to navigate data-driven environments. Furthermore, this study highlights the urgent need to balance technical competence with core human capabilities, such as critical thinking, resilience, and emotional intelligence. Ultimately, we propose actionable strategy models for higher education institutions—specifically focusing on rural and semi-urban government colleges—to bridge the digital divide, foster lifelong learning, and cultivate adaptive mindsets capable of thriving in a constantly evolving global landscape.

A LITERATURE REVIEW OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING APPROACHES FOR HEART ATTACK DETECTION

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Cardiovascular disease, and myocardial infarction in particular, remains a leading contributor to global mortality, and a substantial proportion of cardiac events occur without adequate prior warning under conventional, episodic monitoring practices. The convergence of the Internet of Things (IoT) and Artificial Intelligence/Machine Learning (AI/ML) has motivated a growing body of research into systems capable of continuous physiological monitoring and automated cardiac risk estimation. This paper presents a literature survey of existing research on IoT-enabled and AI/ML-based approaches to heart attack detection. The reviewed literature is organized into threshold-based IoT monitoring systems, machine-learning-based risk detection approaches, and wearable/smartwatch-based real-time detection systems. The survey compares the sensing modalities, algorithms, and reported outcomes of the reviewed studies, and identifies recurring limitations including restricted physiological parameter sets, limited use of adaptive or deep-learning models in low-cost systems, connectivity and battery constraints in wearable designs, and a general scarcity of large-scale real-world clinical validation. Based on these observations, the survey outlines research gaps and challenges facing the field and discusses a proposed future research direction – an IoT-enabled AI-based real-time cardiac monitoring concept – as a possible avenue for addressing some of the identified gaps.

BETWEEN DUTY AND SELF: EXPLORING CAREER EXPERIENCES AND PROFESSIONAL IDENTITY AMONG MILITARY SPOUSES

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Behind every uniform in the Indian armed forces stands a family, and very often a spouse who keeps that family steady. Spouses of service personnel, most of them wives, move with every posting, run homes and raise children alone during long separations, and try to hold on to their own careers along the way. Yet their working lives get far less attention. This paper looks at the career challenges and professional identity of military spouses in India. It brings together the small but growing body of Indian research on military wives,



national labour force data, and studies from the US and UK. The review suggests that the real problem is not finding a job but keeping a career going. Each transfer can break professional networks, cut a job short or delay education. In India, these breaks meet strong social expectations that a wife will give up her ambitions for her husband's service, so the loss is often accepted quietly and rarely named. Because work shapes how people see themselves, career interruption can also shake a spouse's sense of identity. Indian studies describe wives who feel torn between personal goals and military duties, who learn the customs of military life, and who manage children and households on their own during long postings. Welfare organisations such as the Army Wives Welfare Association offer skill training and livelihood support. However, it is not yet clear how well these programmes serve spouses who are graduates or professionals and want to continue their chosen careers. Drawing on identity theory and conservation of resources theory, the paper proposes a simple framework. Career barriers, family demands, cultural expectations and lack of recognition together weaken professional identity, which in turn affects well-being. Community support, flexible or remote work and recognition of skills can soften this effect. It closes with practical suggestions for counsellors, welfare bodies, employers and policymakers. It also calls for research on spouses of junior commissioned officers and other ranks, and male spouses, whose experiences are still largely missing. Supporting military spouses means protecting their careers, and the sense of self that comes with them.

MULTI-AGENT REINFORCEMENT LEARNING FRAMEWORK FOR NEXT-GENERATION AUTONOMOUS VEHICLES

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Autonomous vehicles have to function safely, effectively, and reliably under highly dynamic conditions where the interaction between multiple cars, pedestrians, and smart infrastructure takes place constantly. Classical systems and techniques like rule-based systems and single-agent decision-making do not suffice to handle the complexity, uncertainty, and scalability involved. It is for this reason that there emerges an ever-growing need for intelligent frameworks that would enable autonomous cars to exhibit collaborative and adaptive behavior. Multi-Agent Reinforcement Learning approach appears to be a promising choice when dealing with such issues since it would enable multiple agents to obtain an optimal policy for actions while interacting not only with the environment but also with other agents. The distinguishing factor of autonomous driving systems based on MARL approach is that in such a system a car would be considered as an intelligent agent that acquires strategies for actions, for instance, lane changes, merging, platooning, and intersection negotiation, by trial-and-error method. The presented study provides a thorough analysis of Multi-Agent Reinforcement Learning approaches used in autonomous driving vehicles for making intelligent decisions. The basics of reinforcement learning and multi-agent systems are introduced. Moreover, models and algorithms of MARL as well as training methods are discussed. Moreover, it analyzes the state-of-the-art methodologies in terms of simulation environments, evaluation metrics, and limitations. Based on the literature survey, the report emphasizes the advantages of the approach in question and reveals the open research questions related to non-stationarity.

TRADING VOLUME AND STOCK RETURN VOLATILITY: EVIDENCE FROM SELECTED NIFTY 50 COMPANIES

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Trading volume and price volatility are two of the most closely watched features of a stock market, yet the direction of the link between them is still debated. This paper examines whether trading volume and stock return volatility are related on the same day and whether either variable helps to predict the other. The sample consists of ten NIFTY 50 companies selected from ten different sectors, observed over 982 trading days from January 2022 to December 2025. Volatility is measured with the Parkinson high–low range estimator, and trading volume is measured as abnormal volume, which compares each day's volume with the company's average over the previous twenty trading days. The study uses Pearson correlation, ordinary least squares regression and Granger causality tests with five lags, and it checks the results in two sub-periods and with a second volatility measure. Volume and volatility are positively and significantly related on the same day for all ten companies, with correlations between 0.431 and 0.547. This relationship holds in both sub-periods and with the alternative measure. In contrast, past volume helps to predict volatility for only one company, and past volatility helps to predict volume for three companies, and none of these predictive results holds in both sub-periods. The findings support the mixture-of-distributions view that volume and volatility respond together to the same flow of information. For investors and risk managers, unusually high volume is a useful sign of higher same-day risk but not a reliable tool for forecasting future volatility.

FROM ARTIFICIAL INTELLIGENCE TO SUSTAINABLE INTELLIGENCE

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Artificial Intelligence is transforming the business landscape by reshaping decision-making, customer engagement, operational efficiency and value creation. However, the growing integration of AI highlights the need to look beyond technological capability and immediate business gains towards responsible and sustainable value creation. The transition from Artificial Intelligence to Sustainable Intelligence reflects a shift from asking what AI can do for business to considering what AI should do for business, society and the environment. Sustainable Intelligence integrates economic value with environmental responsibility, social well-being, ethical practices and long-term business sustainability. AI applications such as demand forecasting, predictive maintenance, intelligent logistics, waste reduction and personalized marketing demonstrate its potential to support both business performance and sustainability. At the same time, responsible use of customer data, privacy, transparency and ethical decision-making remain essential. Sustainable Intelligence therefore represents a broader approach in which technology-driven innovation is aligned with responsible business practices and the creation of sustainable value for businesses, people and the planet.

पर्यटन, आतिथ्य और सतत विकास— राजस्थान के संदर्भ में

शिमू दयाल मीना

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मानव का इतिहास और सांस्कृतिक विरासत वर्तमान पर्यटन का आधार है। पर्यटल शब्द दो शब्दों से मिलकर बना है। यदि (चारों ओर) और अटल (धूमना) इसका शाब्दिक अर्थ है अपने दैनिक जीवन और कार्यक्षेत्र से बाहर निकलकर किसी नवीन स्थान की यात्रा करना। प्राचीनकाल से ही मानव में नवीन जगहों को देखने, जानने और समझने की तीव्र इच्छा रही है। आज के आधुनिक जीवन में पर्यटन केवल मनोरंजन का साधन नहीं, बल्कि जीवन की एक अनिवार्य आवश्यकता बन चुका है। पर्यटन के विभिन्न प्रकारों में ऐतिहासिक और सांस्कृतिक पर्यटन, प्राकृतिक पर्यटन, धार्मिक पर्यटन, साहसिक पर्यटन, चिकित्सा पर्यटन आदि मुख्य हैं, जो हमारे जीवन को सुन्दर, ज्ञानवर्धक और जीवंत बनाता है। पर्यटन मानव जीवन के बौद्धिक, सांस्कृतिक और मानसिक विकास का एक सशक्त साधन है। पर्यटन व्यक्ति को व्यावहारिक ज्ञान देता है, रोजगार सृजन व राजस्व संग्रह का प्रमुख है। अत्यधिक पर्यटन के कारण पर्यावरण प्रदूषण, प्लास्टिक कचरा, ऐतिहासिक धरोहरों को नुकसान पहुंचाने जैसी गंभीर चुनौतियों भी हैं। इन समस्याओं को समाधान हेतु आज सतत पर्यटन की सख्त आवश्यकता है।

लैंगिक समानता, समावेशन एवं सामाजिक न्याय : समतामूलक समाज की आधारशिला

आशारानी

असिस्टेंट प्रोफेसर हिन्दी, एस.आर.पी. महाविद्यालय, बांड़ीकुई

लैंगिक समानता, सामाजिक समावेशन एवं सामाजिक न्याय एक लोकतांत्रिक और समतामूलक समाज के निर्माण के प्रमुख आधार हैं। वर्तमान समय में शिक्षा, रोजगार, स्वास्थ्य एवं सामाजिक-राजनीतिक सहभागिता के क्षेत्र में महिलाओं की स्थिति में सुधार हुआ है, फिर भी लैंगिक भेदभाव, अवसरों की असमानता तथा सामाजिक व आर्थिक विषमताएँ अनेक स्तरों पर विद्यमान हैं। अतः प्रत्येक व्यक्ति को समान अधिकार, अवसर, सम्मान एवं गरिमापूर्ण जीवन प्रदान करना आवश्यक है।

उद्देश्य

इस अध्ययन का प्रमुख उद्देश्य लैंगिक समानता की आवश्यकता को समझना, सामाजिक समावेशन की भूमिका का विश्लेषण करना तथा सामाजिक न्याय के माध्यम से समान अवसर एवं अधिकार सुनिश्चित करने की आवश्यकता को रेखांकित करना है।

शोध पद्धति

प्रस्तुत अध्ययन वर्णनात्मक एवं विश्लेषणात्मक प्रकृति का है। इसमें द्वितीयक स्रोतों के रूप में पुस्तकों, शोध-पत्रों, शोध-रिपोर्टों, सरकारी दस्तावेजों तथा विभिन्न प्रकाशित स्रोतों का अध्ययन एवं विश्लेषण किया गया है।

स्थानीय शासन और सतत विकास : भारत में पंचायतों की भूमिका

डॉ. सिद्धार्थ राव

सहायक आचार्य (राजनीति विज्ञान), राजकीय नेहरू मेमोरियल महाविद्यालय, हनुमानगढ़ (राज.)

इक्कीसवीं सदी में वैश्विक विकास का विमर्श समतामूलक, समावेशी और पर्यावरण-अनुकूल प्रगति पर केंद्रित है, जिसे संयुक्त राष्ट्र के "सतत विकास लक्ष्यों" (SDGs 2030) के रूप में संहिताबद्ध किया गया है। भारत जैसे जनसांख्यिकीय रूप से विशाल और ग्रामीण-प्रधान राष्ट्र में इन 17 वैश्विक लक्ष्यों की प्राप्ति केंद्रीय या प्रांतीय नीतियों के केवल शीर्ष-स्तरीय (Top-down) क्रियान्वयन से संभव नहीं है। इसके लिए विकास की प्रक्रियाओं का स्थानीयकरण (Localization) अनिवार्य है। भारतीय लोकतांत्रिक व्यवस्था में "73वें संविधान संशोधन अधिनियम, 1992" ने त्रि-स्तरीय पंचायती राज संस्थाओं (PRIs) को वैधानिक और संवैधानिक शक्ति प्रदान कर विकेंद्रीकृत नियोजन की नींव रखी।

संविधान की 11वीं अनुसूची में शामिल 29 विषय सीधे तौर पर गरीबी उन्मूलन, लैंगिक समानता, प्राथमिक स्वास्थ्य, गुणवत्तापूर्ण शिक्षा, स्वच्छ पेयजल, और पर्यावरण संरक्षण जैसे सतत विकास लक्ष्यों से अंतर्संबंधित हैं। प्रस्तुत शोध पत्र गुणात्मक अनुसंधान पद्धति और द्वितीयक आँकड़ों (नीति आयोग के SDG इंडिया इंडेक्स, पंचायती राज मंत्रालय की रिपोर्टें और संयुक्त राष्ट्र विकास कार्यक्रम के प्रतिवेदनों) के विश्लेषणात्मक अध्ययन के माध्यम से यह पड़ताल करता है कि भारत की ग्राम पंचायतें सतत विकास को धरातल पर उतारने में कहाँ तक सफल रही हैं। यह शोध विशेष रूप से “ग्राम पंचायत विकास योजना” (GPDP) के प्रभाव का मूल्यांकन करता है, जो “जमीनी स्तर से ऊपर की ओर” (Bottom-up Approach) के सिद्धांत पर काम करते हुए स्थानीय समुदायों को अपनी विकास प्राथमिकताएँ स्वयं तय करने का अधिकार देती है। अनुसंधान के निष्कर्ष दर्शाते हैं कि पंचायतों ने ग्रामीण भारत में सामाजिक समावेशन (विशेषकर महिला और वंचित वर्गों के राजनीतिक नेतृत्व) और बुनियादी ढाँचे के विकास (जैसे जल जीवन मिशन और मनरेगा के माध्यम से जल संरक्षण) में अभूतपूर्व भूमिका निभाई है। हालाँकि, यह शोध पत्र उन संरचनात्मक बाधाओं को भी रेखांकित करता है जो इन संस्थाओं की पूर्ण क्षमता के मार्ग में रोड़ा बनी हुई हैं; जैसे— वित्तीय स्वायत्तता का अभाव (3-Fs: Funds, Functions, Functionaries की कमी), नौकरशाही का अत्यधिक नियंत्रण, डिजिटल साक्षरता की कमी और “सरपंच-पति” जैसी पितृसत्तात्मक सामाजिक विसंगतियाँ। अंततः यह शोध पत्र नीतिगत निष्कर्ष के रूप में यह प्रतिपादित करता है कि सतत विकास लक्ष्यों को 2030 तक प्राप्त करने के लिए पंचायतों को महज “योजना क्रियान्वयन एजेंसी” मानने के बजाय उन्हें वास्तविक “स्थानीय सरकार” के रूप में वित्तीय रूप से आत्मनिर्भर, तकनीकी रूप से सक्षम और प्रशासनिक रूप से स्वायत्त बनाना अपरिहार्य है।

चीन की जल-डेटा साझाकरण नीति : ब्रह्मपुत्र नदी बेसिन में भारत और बांग्लादेश की मानव सुरक्षा चुनौतियों का अध्ययन

रितिक

रिसर्च स्कॉलर, निर्वाण विश्वविद्यालय, जयपुर राजस्थान।

डॉ. सुनील कुमार जांगिड़

प्रोफेसर, राजनीति विज्ञान विभाग, निर्वाण विश्वविद्यालय, जयपुर राजस्थान।

डॉ. कपिल कुमार आनंद

सहायक प्रोफेसर, राजनीति विज्ञान विभाग, एस.एस. जैन सुबोध पी.जी. कॉलेज, जयपुर।

प्रस्तुत शोध अध्ययन नदी (जल) डेटा की राजनीति से संदर्भित है जो चीन की जल डेटा साझा में कमी के कारण भारत और बांग्लादेश की सुरक्षा और आपदा प्रबंधन पर प्रभाव का विश्लेषणात्मक अध्ययन करता है। इस शोध का प्राथमिक लक्ष्य, ऊपर तटवर्ती वाले देशों पर निचले तटवर्ती वाले देशों की नदी (जल) डेटा साझा हेतु निर्भरता को समझना है। भारत और बांग्लादेश, चीन की तुलना में नीचे तटवर्ती अर्थात् दक्षिण एशिया में आते हैं और चीन द्वारा जल डेटा साझा में कमी करने के कारण इन देशों पर बाढ़ जैसी बड़ी प्राकृतिक आपदा का खतरा बना रहता है। ब्रह्मपुत्र नदी बेसिन और इसकी सहायक नदियाँ भारत, चीन और बांग्लादेश से होकर बहती हैं। ब्रह्मपुत्र नदी विश्व की सबसे बड़ी नदियों में से एक है जिसका आरंभिक क्षेत्र चीन है। चीन के द्वारा इन नदियों का डाटा साझा न करने पर भारत के पूर्वी क्षेत्र और बांग्लादेश जैसे निचले तटवर्ती वाले देशों पर विशेषकर मानसून के महीने में नदियों के जल स्तर का कोई भी डाटा उपलब्ध नहीं होता है जिसके कारण अचानक आने वाली बाढ़ से भारत और बांग्लादेश के क्षेत्र में बड़ी हानि पहुँचाती है। इस अचानक आने वाली बाढ़ से भारत और बांग्लादेश दोनों देशों के आपदा प्रबंधन की क्षमता पर नकारात्मक प्रभाव पड़ता है। भारत और चीन के बीच इन नदियों के डेटा साझा करने हेतु 2002 में डवने समझौता हुआ इस समझौते के तहत चीन अपने क्षेत्र से भारत की ओर बहने वाली नदियों का डाटा भारत को साझा करेगा। जिसमें ब्रह्मपुत्र नदी और उसकी सहायक नदियों से संबंधित यह डाटा प्रत्येक वर्ष मई से अक्टूबर तक का देने के लिए चीन ने सहमति जताई। भारत और चीन के बीच हुए इस समझौते का समय-समय पर नवीनीकरण भी किया गया, परंतु चीन ने डोकलाम संघर्ष के समय भारत को नदियों से संबंधित जल डाटा साझा करना बंद कर दिया जिसके कारण भारत और

बांग्लादेश का नदियों से संबंधित जल स्तर का अनुमान लगाना कठिन हो गया जिसके कारण मानव सुरक्षा के लिए खतरा बढ़ गया। नदियों का डाटा ना होने के कारण आने वाली बाढ़ से आपदा प्रबंधन की असमर्थता बढ़ जाती है भारत और बांग्लादेश के क्षेत्रों और क्षेत्रवासियों को काफी बड़े स्तर पर हानि का सामना करना पड़ता है चीन द्वारा जल नदी डाटा साझा करने की कमी से भारत और चीन के बीच क्षेत्रीय सहयोग और विश्वास में कमी आई। अतः चीन ने अपनी इस भौगोलिक स्थिति को भारत के खिलाफ एक रणनीतिक हथियार के रूप में इस्तेमाल किया है।

राजेंद्र यादव और अमरकांत के उपन्यासों में बदलते भारतीय समाज और मानवीय संबंधों के संकट का आलोचनात्मक अध्ययन

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डॉ. रितु शर्मा

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हिन्दी साहित्य में राजेंद्र यादव और अमरकांत ऐसे रचनाकार हैं, जिन्होंने भारतीय समाज के संक्रमणकालीन यथार्थ को अत्यंत संवेदनशीलता और वैचारिक गहराई के साथ अभिव्यक्त किया है। प्रस्तुत शोध आलेख “राजेंद्र यादव और अमरकांत के उपन्यासों में बदलते भारतीय समाज और मानवीय संबंधों के संकट का आलोचनात्मक अध्ययन” के माध्यम से यह विश्लेषित करने का प्रयास किया गया है कि दोनों लेखकों ने स्वातंत्रोत्तर भारतीय समाज में उत्पन्न सामाजिक, आर्थिक, सांस्कृतिक तथा नैतिक परिवर्तन को किस प्रकार अपने उपन्यासों में रूपायित किया है। अध्ययन का प्रमुख उद्देश्य यह समझना है कि आधुनिकीकरण, नगरीकरण, मध्यवर्गीय चेतना, पारिवारिक विघटन, उपभोक्तावाद तथा बदलती सामाजिक संरचनाओं में मानवीय संबंधों को किस प्रकार प्रभावित किया और इन परिवर्तनों का साहित्यिक प्रतिरूप इन लेखकों के तथ्य एवं शिल्प में कैसे व्यक्त हुआ। राजेंद्र यादव के उपन्यासों में मध्यवर्गीय जीवन, स्त्री-पुरुष संबंधों का तनाव, अस्तित्वगत अकेलापन तथा वैचारिक विद्रोह प्रमुख रूप से उभरते हैं, जबकि अमरकांत के साहित्य में निम्न एवं मध्यवर्गीय जीवन की करुण यथार्थपरकता, नैतिक संघर्ष, मानवीय संवेदना तथा सामाजिक विषमता का मार्मिक चित्रण दिखायी देता है। यह शोध तुलनात्मक एवं आलोचनात्मक पद्धति के माध्यम से दोनों लेखकों की रचनाओं में निहित सामाजिक चेतना और संबंधों के संकट का विवेचन करेगा। अध्ययन यह स्थापित करने का प्रयास करेगा कि दोनों रचनाकारों ने बदलते भारतीय समाज की जटिलताओं को मानवीय दृष्टि से समझते हुए हिंदी उपन्यास परम्परा को नयी वैचारिक दिशा प्रदान की।

आधुनिक शिक्षा में संस्कृत भाषा एवं कृत्रिम बुद्धिमत्ता का अंतःविषयक अध्ययन

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वर्तमान डिजिटल युग में शिक्षा के क्षेत्र में कृत्रिम बुद्धिमत्ता ;तजपपिबपंस प्दजमससपहमदबमद्ध का प्रभाव निरंतर विस्तृत हो रहा है। आधुनिक शिक्षण पद्धतियों में तकनीकी नवाचारों के बढ़ते प्रयोग ने प्राचीन भारतीय ज्ञान परंपरा और संस्कृत भाषा के अध्ययन के लिए भी नवीन संभावनाएँ उत्पन्न की हैं। संस्कृत भारतीय संस्कृति, दर्शन, साहित्य, विज्ञान एवं ज्ञान-विज्ञान की समृद्ध परंपरा की संवाहक भाषा है। ऐसे में संस्कृत भाषा और कृत्रिम बुद्धिमत्ता के मध्य अंतःविषयक संबंधों का अध्ययन समकालीन शिक्षा व्यवस्था की दृष्टि से महत्वपूर्ण हो जाता है। प्रस्तुत शोध का प्रमुख उद्देश्य आधुनिक शिक्षा में संस्कृत भाषा के अध्ययन, अध्यापन एवं अनुसंधान को अधिक प्रभावी बनाने में कृत्रिम बुद्धिमत्ता की भूमिका का विश्लेषण करना है। पाणिनीय व्याकरण की नियमबद्ध संरचना, संस्कृत भाषा की शब्द-निर्माण प्रक्रिया तथा उसकी वाक्य रचना का आधुनिक प्राकृतिक भाषा प्रसंस्करण ;छंजनतंस र्दहनंहम च्त्वबमेपदहद्ध के संदर्भ में अध्ययन इस शोध का एक महत्वपूर्ण पक्ष है। इसके अतिरिक्त, कृत्रिम बुद्धिमत्ता आधारित अनुवाद प्रणाली, डिजिटल पाठ्य सामग्री, स्वचालित भाषा शिक्षण तथा संस्कृत ग्रंथों के डिजिटलीकरण की संभावनाओं का भी विवेचन किया गया है। यह

अध्ययन संस्कृत शिक्षण में तकनीकी समावेशन से संबंधित अवसरों के साथ-साथ भाषा की व्याकरणिक जटिलताओं, अनुवाद की शुद्धता, प्रामाणिक डिजिटल सामग्री की उपलब्धता तथा तकनीकी सीमाओं जैसी चुनौतियों को भी रेखांकित करता है। इस संदर्भ में राष्ट्रीय शिक्षा नीति 2020 के अंतर्गत बहुविषयक शिक्षा और भारतीय ज्ञान परंपरा के समन्वय की संभावनाएँ भी विचारणीय हैं। निष्कर्षतः, संस्कृत भाषा और कृत्रिम बुद्धिमत्ता का समन्वय पारंपरिक ज्ञान के संरक्षण, ज्ञान के व्यापक प्रसार तथा आधुनिक शिक्षण प्रक्रिया के नवाचार में सार्थक योगदान दे सकता है। यह अंतःविषयक दृष्टिकोण संस्कृत अध्ययन को समकालीन शैक्षिक आवश्यकताओं से जोड़ने की दिशा में एक महत्वपूर्ण आधार प्रस्तुत करता है।

हिंदी साहित्य में जल संसाधन प्रबंधन : संरक्षण और सामुदायिक सहभागिता के संदर्भ में

डॉ. वर्षा सिखवाल

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जल मानव जीवन, सभ्यता और संस्कृति का मूल आधार है। वर्तमान समय में जलवायु परिवर्तन, भूजल के अत्यधिक दोहन, जलस्रोतों के प्रदूषण एवं पारंपरिक जल-स्रोतों के नष्ट होने के कारण जल-संकट एक गंभीर वैश्विक एवं सामाजिक चुनौती बन चुका है। जल संसाधन प्रबंधन के प्रश्न को सामान्यतः तकनीकी, प्रशासनिक अथवा आर्थिक दृष्टि से देखा जाता है, किंतु हिंदी साहित्य में जल को जीवन, संस्कृति, प्रकृति और मानवीय संवेदना से जोड़कर देखा गया है। हिंदी साहित्य जल संरक्षण और संसाधन प्रबंधन के सामाजिक एवं सांस्कृतिक आयामों को समझने का महत्वपूर्ण माध्यम है। प्रस्तुत शोध पत्र का उद्देश्य हिंदी साहित्य में जल-संकट, पारंपरिक जल-संरक्षण प्रणालियों तथा सामुदायिक सहभागिता की अवधारणा का अध्ययन करना है। इसके लिए रामदरश मिश्र के 'पानी के प्राचीर', 'जल टूटता हुआ' और 'सूखता हुआ तालाब', नासिरा शर्मा के 'कुड़ियाँ जान' तथा वीरेंद्र जैन के 'डूब' जैसी रचनाओं को आधार बनाया गया है। इन कृतियों में जल-संकट के सामाजिक प्रभाव, ग्रामीण जीवन और प्राकृतिक संसाधनों के संबंध तथा मनुष्य द्वारा प्रकृति के अनियंत्रित दोहन के परिणामों को विभिन्न स्तरों पर प्रस्तुत किया गया है। जल संसाधन प्रबंधन के संदर्भ में वीरेंद्र जैन के उपन्यास 'डूब' का महत्वपूर्ण स्थान है। यह उपन्यास स्पष्ट करता है कि जल संसाधनों का उपयोग करते समय स्थानीय समुदायों के अधिकार, पुनर्वास, पर्यावरणीय संतुलन और मानवीय संवेदनाओं की उपेक्षा नहीं की जा सकती। नासिरा शर्मा के उपन्यास 'कुड़ियाँ जान' में जल-संकट, सूखा, भूजल के गिरते स्तर और जल के लिए संघर्ष को केंद्र में रखा गया है। उपन्यास जल को केवल प्राकृतिक संसाधन नहीं, बल्कि मनुष्य के जीवन, सामाजिक संबंधों और अस्तित्व से जुड़े प्रश्न के रूप में प्रस्तुत करता है। अनुपम मिश्र की रचना 'राजस्थान की रजत बूँदें' में राजस्थान के मरुस्थलीय क्षेत्रों में जल-संरक्षण की पारंपरिक प्रणालियों और सामुदायिक सहभागिता का विस्तृत वर्णन मिलता है। ये रचनाएं बताती हैं कि जल-संरक्षण केवल आधुनिक तकनीक का विषय नहीं, बल्कि स्थानीय अनुभव, सामूहिक उत्तरदायित्व और सांस्कृतिक परंपराओं से भी जुड़ा हुआ है। हिंदी साहित्य जल को केवल प्राकृतिक संसाधन न मानकर जीवन और सामाजिक अस्तित्व के मूलभूत तत्व के रूप में प्रस्तुत करता है। अतः जल संसाधन प्रबंधन की प्रभावी रणनीति के लिए साहित्यिक संवेदना, लोकज्ञान, पारंपरिक जल प्रणालियों और सामुदायिक सहभागिता को आधुनिक जल-प्रबंधन की नीतियों से जोड़ना आवश्यक है।

लैंगिक समानता, सामाजिक समावेशन एवं सामाजिक न्याय: एक समाजशास्त्रीय अध्ययन

डॉ. सियाराम मीना

सहायक आचार्य (समाजशास्त्र), राजकीय महिला महाविद्यालय दौसा

लैंगिक समानता, सामाजिक समावेशन और सामाजिक न्याय आज के समाज के महत्वपूर्ण प्रश्न हैं। किसी भी समाज का वास्तविक विकास तभी संभव है, जब उसके सभी वर्गों और लैंगिक समूहों को समान अवसर, सम्मान और संसाधनों तक उचित पहुँच प्राप्त हो। भारतीय समाज में महिलाओं की स्थिति में पिछले कुछ दशकों में शिक्षा, रोजगार, राजनीतिक भागीदारी और कानूनी अधिकारों के क्षेत्र में महत्वपूर्ण परिवर्तन हुए हैं। इसके बावजूद सामाजिक जीवन में लैंगिक असमानता, भेदभाव, अवसरों की असमानता और सामाजिक बहिष्करण की स्थितियाँ अभी भी देखने को मिलती

हैं। प्रस्तुत अध्ययन का उद्देश्य लैंगिक समानता, सामाजिक समावेशन और सामाजिक न्याय के बीच संबंध को समाजशास्त्रीय दृष्टिकोण से समझना है। अध्ययन में यह जानने का प्रयास किया गया है कि सामाजिक एवं सांस्कृतिक मान्यताएँ, पितृसत्तात्मक व्यवस्था, जाति, वर्ग, शिक्षा, आर्थिक स्थिति तथा ग्रामीण-शहरी अंतर किस प्रकार लैंगिक समानता और सामाजिक समावेशन को प्रभावित करते हैं। विशेष रूप से महिलाओं और सामाजिक रूप से वंचित समूहों के लिए उपलब्ध अवसरों तथा उनके सामने आने वाली सामाजिक एवं आर्थिक बाधाओं पर ध्यान दिया गया है। यह अध्ययन द्वितीयक स्रोतों पर आधारित है, जिसमें उपलब्ध शोध साहित्य, सरकारी रिपोर्टें, नीतिगत दस्तावेजों तथा संबंधित अध्ययनों का उपयोग किया गया है। अध्ययन से स्पष्ट होता है कि संवैधानिक प्रावधानों और विभिन्न सरकारी योजनाओं के बावजूद सामाजिक स्तर पर समानता की स्थिति अभी पूर्ण रूप से स्थापित नहीं हो पाई है। शिक्षा और आर्थिक आत्मनिर्भरता में सुधार के बावजूद पारंपरिक सामाजिक सोच, लैंगिक भूमिकाओं की रूढ़ धारणाएँ और संसाधनों पर असमान नियंत्रण महिलाओं की सामाजिक भागीदारी को प्रभावित करते हैं। अध्ययन यह दर्शाता है कि सामाजिक न्याय केवल कानूनी समानता तक सीमित नहीं है। इसके लिए समान अवसर, शिक्षा, आर्थिक स्वतंत्रता, सम्मानजनक रोजगार, सामाजिक सुरक्षा और निर्णय-निर्माण में प्रभावी भागीदारी आवश्यक है। निष्कर्षतः, लैंगिक समानता और सामाजिक समावेशन को मजबूत करने के लिए कानून एवं नीतियों के साथ-साथ सामाजिक दृष्टिकोण में परिवर्तन भी आवश्यक है। परिवार, शिक्षा, समुदाय और सामाजिक संस्थाओं की सकारात्मक भूमिका के माध्यम से ही अधिक समानतापूर्ण, समावेशी और न्यायपूर्ण समाज का निर्माण संभव है।

रामजल सेतु लिंक प्रोजेक्ट और आपदा प्रबंधन, बाढ़ एवं सूखा नियंत्रण की संभावनाएं

कमलेश कुमार मीणा

शोधार्थी, कला, मानविकी एवं सामाजिक विज्ञान स्कूल, निर्वाण विश्वविद्यालय, जयपुर, राजस्थान

डॉ. शारदा

शोध निर्देशक, कला, मानविकी एवं सामाजिक विज्ञान स्कूल, निर्वाण विश्वविद्यालय, जयपुर, राजस्थान

रामजल सेतु लिंक परियोजना भारत में नदी-जल संसाधनों के समन्वित प्रबंधन की दिशा में एक महत्वपूर्ण अवधारणा के रूप में उभर रही है। यह परियोजना जल की क्षेत्रीय असमानताओं को संतुलित करने, बाढ़ एवं सूखा जैसी प्राकृतिक आपदाओं के प्रभाव को कम करने तथा कृषि एवं ग्रामीण अर्थव्यवस्था को सुदृढ़ बनाने की संभावनाएं प्रस्तुत करती हैं। भारत के अनेक क्षेत्रों में एक ओर अत्यधिक वर्षा एवं बाढ़ की समस्या है वहीं दूसरी ओर जलाभाव एवं सूखे की स्थिति बनी रहती है। ऐसी परिस्थिति में नदी-जोड़ो परियोजनाएं अतिरिक्त जल को जलाभाव वाले क्षेत्रों तक पहुंचाने का माध्यम बन सकती हैं। इस शोध आलेख में रामजल सेतु लिंक परियोजना के माध्यम से आपदा प्रबंधन की संभावनाओं का विश्लेषण किया जाएगा। अध्ययन में बाढ़ नियंत्रण, सूखा प्रबंधन, सिंचाई विस्तार, जल संरक्षण तथा पर्यावरणीय प्रभावों का आलोचनात्मक परीक्षण किया जाएगा। साथ ही परियोजना से जुड़ी सामाजिक, आर्थिक एवं पारिस्थितिक चुनौतियों का भी विवेचन किया जाएगा। शोध का उद्देश्य यह स्पष्ट करना है कि यदि वैज्ञानिक योजना, पर्यावरणीय संतुलन तथा स्थानीय समुदाय की सहभागिता सुनिश्चित की जाए तो यह परियोजना दीर्घकालीक जल-सुरक्षा एवं आपदा न्यूनीकरण में प्रभावी भूमिका निभा सकती है। यह अध्ययन सतत विकास, जल-प्रबंधन और आपदा जोखिम न्यूनीकरण के क्षेत्र में महत्वपूर्ण योगदान देने का प्रयास करता है।

पारंपरिक भारतीय ज्ञान प्रणाली (IKS) और आधुनिक पर्यावरणीय चुनौतियाँ : एक विश्लेषणात्मक अध्ययन

डॉ. भावना

सहायक आचार्य (इतिहास), राजकीय नेहरू मेमोरियल महाविद्यालय, हनुमानगढ़ (राज.)

“ईशा वास्यमिदं सर्वं यत्किञ्च जगत्यां जगत्। तेन त्यक्तेन भुञ्जीथा मा गृधः कस्यस्विद्धनम्”

(ईशोपनिषद्)

उपरोक्त वैदिक सूक्त भारतीय जीवन दर्शन का मूल आधार है, जिसका अर्थ है कि इस ब्रह्मांड में जो कुछ भी जड़ या चेतन है, वह सब ईश्वर द्वारा व्याप्त है। इसलिए, मनुष्य को यहाँ के संसाधनों का उपभोग केवल त्याग-भाव और अपनी आवश्यकताओं के अनुसार ही करना चाहिए, न कि लोभ के वश में होकर। आज संपूर्ण विश्व 21वीं सदी में तकनीकी और औद्योगिक प्रगति के चरम पर है, लेकिन इस विकास की एक बहुत बड़ी कीमत पर्यावरण को चुकानी पड़ी है। ग्लोबल वार्मिंग, जलवायु परिवर्तन (Climate Change), घटती जैव विविधता, जल संकट और वायु प्रदूषण जैसी आधुनिक पर्यावरणीय चुनौतियों ने मानव जाति के अस्तित्व पर ही प्रश्नचिह्न लगा दिया है। आधुनिक विज्ञान और पश्चिमी विकास मॉडल ने जहाँ भौतिक सुख-सुविधाएं तो दीं, लेकिन प्रकृति को एक “निर्जीव वस्तु” मानकर उसका अत्यधिक दोहन किया। इस अंधाधुंध उपभोक्तावादी संस्कृति के कारण आज पृथ्वी का पारिस्थितिक संतुलन (Ecological Balance) पूरी तरह बिगड़ चुका है। इस वैश्विक संकट के दौर में, पारंपरिक भारतीय ज्ञान प्रणाली (Indian Knowledge Systems - IKS) एक अत्यंत प्रासंगिक और व्यावहारिक समाधान प्रस्तुत करती है। भारत की प्राचीन परंपरा में पर्यावरण संरक्षण कोई आधुनिक राजनीतिक एजेंडा या विवशता नहीं, बल्कि जीवन जीने की एक पद्धति रही है। वेदों, उपनिषदों, पुराणों और बौद्ध-जैन दर्शन में प्रकृति को “माता” माना गया है और नदियों, वृक्षों तथा पशु-पक्षियों की पूजा के माध्यम से उनके संरक्षण को धार्मिक व सामाजिक कर्तव्यों से जोड़ा गया है। इसके अतिरिक्त, भारत के ग्रामीण और जनजातीय समुदायों के पास पारंपरिक जल संचयन (जैसे बावड़ियाँ, तालाब), प्राकृतिक कृषि (जैसे फसल चक्र, जैविक खाद), और “पवित्र उपवन” (Sacred Groves) के रूप में समृद्ध लोक-ज्ञान उपलब्ध है। यह ज्ञान सदियों के अनुभव और प्रकृति के साथ सह-अस्तित्व (Co-existence) की भावना से उपजा है, जो संयुक्त राष्ट्र के सतत विकास लक्ष्यों (Sustainable Development Goals – SDGs) को प्राप्त करने में मील का पत्थर साबित हो सकता है। प्रस्तुत शोध पत्र का मुख्य उद्देश्य आधुनिक पर्यावरणीय संकटों के संदर्भ में पारंपरिक भारतीय ज्ञान की वैज्ञानिकता, प्रासंगिकता और इसके व्यावहारिक अनुप्रयोगों का मूल्यांकन करना है। यह शोध इस बात पर बल देता है कि वर्तमान पर्यावरणीय चुनौतियों से निपटने के लिए हमें केवल आधुनिक तकनीकों पर निर्भर रहने के बजाय, प्राचीन पारिस्थितिक चेतना और आधुनिक विज्ञान के न्यायसंगत समन्वय (Integration) की महती आवश्यकता है।

लैंगिक समानता की अवधारणा और राजस्थान का सामाजिक परिप्रेक्ष्य

डॉ. नरेन्द्र कुमार ढाका

सहायक आचार्य, राजकीय लोहिया महाविद्यालय, चूरू (राजस्थान)

लैंगिक समानता आधुनिक लोकतांत्रिक एवं न्यायपूर्ण समाज की एक महत्वपूर्ण आधारशिला है, जिसका उद्देश्य महिलाओं और पुरुषों को शिक्षा, रोजगार, स्वास्थ्य, आर्थिक संसाधनों, राजनीतिक भागीदारी तथा निर्णय-निर्माण में समान अवसर और अधिकार प्रदान करना है। राजस्थान का सामाजिक परिप्रेक्ष्य ऐतिहासिक रूप से विविध सामाजिक-सांस्कृतिक परंपराओं, ग्रामीण संरचना और पारंपरिक लैंगिक भूमिकाओं से प्रभावित रहा है। यद्यपि शिक्षा, राजनीतिक प्रतिनिधित्व, महिला सशक्तिकरण तथा आर्थिक भागीदारी के क्षेत्रों में पिछले वर्षों में सकारात्मक परिवर्तन दिखाई दिए हैं, फिर भी बाल विवाह, लैंगिक भेदभाव, घरेलू हिंसा, सीमित रोजगार अवसर, वेतन असमानता और महिलाओं के अवैतनिक घरेलू कार्य जैसी चुनौतियाँ लैंगिक समानता के मार्ग में बाधक बनी हुई हैं। प्रस्तुत शोध-पत्र राजस्थान में लैंगिक समानता की अवधारणा को सामाजिक संरचना के संदर्भ में समझने तथा महिलाओं की वर्तमान सामाजिक, आर्थिक एवं राजनीतिक स्थिति का विश्लेषण करने का प्रयास करता है। साथ ही, यह सामाजिक न्याय और समावेशी विकास की दिशा में आवश्यक उपायों को रेखांकित करता है।

बाढ़: कारण, प्रभाव एवं प्रबंधन**डा. नीरज कारगवाल**

सह आचार्य भूगोल, बी.एस.आर.राजकीय कला महाविद्यालय अलवर

बाढ़ विश्व के अनेक भागों में आने वाली प्रमुख प्राकृतिक आपदाओं में से एक है। बाढ़ को केवल अत्यधिक वर्षा से उत्पन्न जलभराव की स्थिति माना जाता है, किंतु आधुनिक परिस्थितियों में इसके पीछे प्राकृतिक तथा मानवजनित दोनों कारण कार्य करते हैं। बाढ़ एक ऐसी स्थिति है जिसमें कोई निश्चित भूक्षेत्र अस्थायी रूप से जलमग्न हो जाता है और और जन-जीवन प्रभावित हो जाता है। बाँध टूटना, जलतरंगों की गति बढ़ना, मानसून की अधिकता व अनियमितता, जलवायु परिवर्तन, हिमनदों का पिघलना, ग्लेशियल झीलों का विस्तार, नदियों के बहाव क्षेत्र में अतिक्रमण, वनों की कटाई, अनियोजित नगरीकरण तथा जल निकासी की अपर्याप्त व्यवस्था ने बाढ़ के जोखिम को बढ़ाया है। विशेष रूप से हिमालयी क्षेत्रों में ग्लेशियल झीलों के बढ़ते आकार और ग्लेशियरों के पीछे हटने से बाढ़ का खतरा बढ़ रहा है। जल मानव जीवन का आधार है, लेकिन जब जल अपनी सामान्य सीमा से बाहर निकलकर मानव बस्तियों, कृषि भूमि तथा आधारभूत संरचनाओं को प्रभावित करने लगता है, तब वही जल बाढ़ का रूप धारण कर लेता है। बाढ़ एक प्राकृतिक प्रक्रिया भी है, क्योंकि नदियों के बाढ़-मैदानों में समय-समय पर मृदा निक्षेपण, जल का फैलाव पारिस्थितिक तंत्र के लिए उपयोगी भी होता है। समस्या तब उत्पन्न होती है, जब मानव बस्तियाँ, सड़कें, उद्योग और कृषि गतिविधियाँ ऐसे क्षेत्रों में अत्यधिक बढ़ जाती हैं। नतीजा भौतिक हानि, इमारतों का जलमग्न होना, जन स्वास्थ्य को नुकसान, फसलों और खाद्यान्न पूर्ति पर बुरे प्रभाव इसके प्रमुख पहलू हैं। जलवायु परिवर्तन के कारण कम समय में अत्यधिक वर्षा की घटनाएँ बढ़ रही हैं। शहरों में कंक्रीट की सतह बढ़ने से वर्षाजल का प्राकृतिक अवशोषण घटता है और थोड़े समय में ही जलभराव तथा शहरी बाढ़ की स्थिति उत्पन्न होती है। बाढ़ के सामाजिक, आर्थिक एवं पर्यावरणीय नकारात्मक प्रभावों से दीर्घ काल तक जूझना पड़ता है। बाढ़ प्रबंधन हेतु मौसम पूर्वानुमान, जोखिम मानचित्रण, नदी जलस्तर की निगरानी, चेतावनी प्रणाली, संवेदनशील क्षेत्रों की पहचान करना आदि आवश्यकता है। बाढ़ प्रबंधन की नीति केवल बांध और तटबंध बनाने तक सीमित नहीं रहनी चाहिए। पर्यावरण संरक्षण, जलवायु परिवर्तन, ग्लेशियल झीलों में बदलाव की जानकारी आदि भी भविष्य के बाढ़ जोखिम को समझने के लिए महत्वपूर्ण हैं। भविष्य में बाढ़ से होने वाली जनहानि और आर्थिक क्षति को कम करने में समन्वित दृष्टिकोण प्रभावी सिद्ध हो सकता है।

डिजिटल युग में युवाओं की मानसिक स्वास्थ्य चुनौतियाँ और श्रीमद्भगवद्गीता के व्यावहारिक सिद्धांतों द्वारा तनाव**प्रबंधन: एक विश्लेषणात्मक अध्ययन****डॉ.ममता कुमारी शर्मा**

सहायक आचार्य संस्कृत, स्वर्गीय राजेशपायलट राजकीय महाविद्यालय बांदाकुई (दौसा)

वर्तमान डिजिटल युग तीव्र तकनीकी विकास, सोशल मीडिया की अति-सक्रियता और अत्यधिक प्रतिस्पर्धा का काल है। इस आभासी वातावरण में समकालीन युवा 'सूचना के अतिप्रवाह', 'छूट जाने के डर' और निरंतर सामाजिक तुलना के कारण तीव्र अवसाद, एंग्जायटी और मानसिक तनाव का सामना कर रहे हैं। इस वैश्विक संकट के समाधान हेतु श्रीमद्भगवद्गीता एक कालजयी मनोवैज्ञानिक और व्यावहारिक परामर्शदाता के रूप में प्रासंगिक है, जो कुरुक्षेत्र के युद्ध रूपी चरम तनाव में अर्जुन (एक भ्रमित और अवसादग्रस्त युवा के प्रतीक) को दिए गए आत्म-प्रबंधन के उपदेशों पर आधारित है। उद्देश्य : प्रस्तुत शोध का मुख्य उद्देश्य डिजिटल युग में युवाओं के तनाव के आधुनिक कारकों की पहचान करना तथा श्रीमद्भगवद्गीता के व्यावहारिक दर्शन (जैसे- निष्काम कर्म, स्थितप्रज्ञता और आत्म-नियंत्रण) का आधुनिक मनोविज्ञान के परिप्रेक्ष्य में विश्लेषण कर एक व्यावहारिक तनाव-प्रबंधन मॉडल प्रस्तावित करना है। शोध पद्धति : यह शोध एक गुणात्मक और अंतःविषय विश्लेषणात्मक अध्ययन है। इसमें श्रीमद्भगवद्गीता के द्वितीय, चतुर्थ और छठे अध्याय के मूल श्लोकों (प्राथमिक स्रोत) का समकालीन मनोवैज्ञानिक शोधों, डिजिटल स्वास्थ्य रिपोर्टों और व्यवहार विज्ञान के सिद्धांतों (द्वितीयक स्रोत) के साथ तुलनात्मक मूल्यांकन किया गया है। निष्कर्ष : शोध के निष्कर्ष दर्शाते हैं कि गीता का 'निष्काम कर्म योग' (कर्मण्येवाधिकारस्ते...) युवाओं को परिणाम की चिंता से मुक्त कर वर्तमान पर ध्यान केंद्रित करना सिखाता है, जो

सोशल मीडिया से उपजे तनाव को कम करता है। द्वितीय अध्याय का 'समत्व भाव' इंटरनेट की आभासी दुनिया में विफलता और सफलता के बीच भावनात्मक संतुलन बनाए रखने में सहायक है। इसके अतिरिक्त, गीता में वर्णित 'इंद्रिय-निग्रह' (आत्म-नियंत्रण) का सिद्धांत वर्तमान समय में युवाओं को 'डिजिटलडिटॉक्स' और स्क्रीन-टाइम को नियंत्रित करने के लिए प्रेरित करता है, जिससे मानसिक एकाग्रता का विकास होता है। सार्थकता : यह शोध निष्कर्ष निकालता है कि श्रीमद्भगवद्गीता के सूत्र केवल आध्यात्मिक नहीं, बल्कि व्यावहारिक 'सेल्फ-हेल्पटूल्स' हैं। आधुनिक शैक्षिक संस्थानों और मानसिक स्वास्थ्य विमर्शों में गीता के इन व्यावहारिक सूत्रों का समावेश युवाओं को डिजिटलव्याकुलताओं के बीच भी मानसिक रूप से सुदृढ़, केंद्रित और संतुलित जीवन जीने की दिशा प्रदान कर सकता है।

लैंगिक समानता, समावेशिता और सामाजिक न्याय: समावेशी और न्यायसंगत समाज के निर्माण का मार्ग

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समकालीन समाज में लैंगिक समानता, समावेशिता और सामाजिक न्याय केवल मानवाधिकार के मूलभूत सिद्धांत ही नहीं हैं, बल्कि सतत और न्यायसंगत वैश्विक विकास के मुख्य स्तंभ भी हैं। यह अध्ययन लैंगिक असमानता, सामाजिक बहिष्कार और व्यवस्थागत अन्याय के अंतर्संबंधों का गहन विश्लेषण करता है। ऐतिहासिक रूप से, पितृसत्तात्मक संरचनाओं, सामाजिक पूर्वाग्रहों और संस्थागत विषमताओं ने महिलाओं, यौन अल्पसंख्यकों (LGBTQ+ समुदाय) और हाशिए पर पड़े वर्गों की सामाजिक, आर्थिक और राजनीतिक भागीदारी को सीमित किया है। यह पत्र उन संरचनात्मक बाधाओं की पहचान करता है जो इन वंचित समूहों के सर्वांगीण विकास में बाधक बनती हैं। सामाजिक न्याय और समावेशिता के सिद्धांतों को अपनाने से न केवल मानवाधिकारों की रक्षा होती है, बल्कि समाज में विविधता, नवाचार और आर्थिक समृद्धि को भी बढ़ावा मिलता है। प्रस्तुत अध्ययन लैंगिक-संवेदनशील नीतियों (gender-responsive policies), सुलभ शिक्षा, स्वास्थ्य सेवाओं, समान अवसर और समावेशी कानून के महत्व पर प्रकाश डालता है। इसके अतिरिक्त, यह शोध विभिन्न पहचानों (जैसे जाति, वर्ग, लिंग और क्षमता) के आपस में जुड़ने से उत्पन्न होने वाली चुनौतियों (Intersectionality) को समझने और उन्हें संबोधित करने की आवश्यकता पर बल देता है। हालाँकि अंतर्राष्ट्रीय और राष्ट्रीय स्तर पर अनेक विधायी प्रयास किए गए हैं, फिर भी नीतिगत स्तर और उनके वास्तविक कार्यान्वयन के बीच एक बड़ा अंतर विद्यमान है। डिजिटल विभाजन, आर्थिक असमानता, और सांस्कृतिक रूढ़िवादिता आज भी समावेशी समाज के निर्माण में प्रमुख चुनौतियाँ हैं। यह पत्र निष्कर्ष निकालता है कि एक वास्तव में न्यायसंगत और समावेशी समाज के निर्माण के लिए बहु-क्षेत्रीय दृष्टिकोण की आवश्यकता है, जिसमें नागरिक समाज, राज्य संस्थाओं, शिक्षाविदों और स्थानीय समुदायों की सक्रिय भागीदारी अनिवार्य है।

आपदा प्रबंधन एवं पर्यावरण संरक्षण: सतत विकास की दिशा में एक भौगोलिक अध्ययन

ज्योत्सना उपाध्याय

सहायक आचार्य, भूगोल, स्वर्गीय राजेश पायलट राजकीय महाविद्यालय बांदीकुई दौसा

वर्तमान समय में बाढ़, सूखा, भूकंप, चक्रवात, भूस्खलन एवं वनाग्नि जैसी प्राकृतिक तथा औद्योगिक दुर्घटनाओं जैसी मानवजनित आपदाएँ मानव जीवन और पर्यावरण को प्रभावित कर रही हैं। अनियोजित नगरीकरण, वनों की कटाई, प्राकृतिक संसाधनों का अत्यधिक दोहन और जलवायु परिवर्तन ने आपदा जोखिम को और बढ़ाया है। अतः आपदा प्रबंधन एवं पर्यावरण संरक्षण का समन्वित अध्ययन आवश्यक है।

उद्देश्य

अध्ययन का उद्देश्य आपदा प्रबंधन एवं पर्यावरण संरक्षण के अंतर्संबंधों का भौगोलिक दृष्टिकोण से अध्ययन करना तथा आपदा जोखिम न्यूनीकरण में पर्यावरण संरक्षण की भूमिका को स्पष्ट करना है। साथ ही, सतत विकास एवं स्थानीय समुदायों की सहभागिता के महत्व को रेखांकित करना है।

शोध पद्धति

अध्ययन मुख्यतः वर्णनात्मक एवं विश्लेषणात्मक पद्धतिपर आधारित है। इसमें सरकारी रिपोर्टों, जनगणना प्रकाशनों, पुस्तकों, शोध-पत्रों, पर्यावरण एवं आपदा प्रबंधन संबंधी रिपोर्टों तथा विश्वसनीय ऑनलाइन स्रोतों से प्राप्त द्वितीयक आँकड़ों का उपयोग किया गया है। आँकड़ों का वर्गीकरण एवं विश्लेषण भौगोलिक दृष्टिकोण से किया गया है तथा आवश्यकता के अनुसार मानचित्र एवं छै तकनीक का उपयोग किया गया है।

अध्ययन की सार्थकता

अध्ययन की सार्थकता इस बात में निहित है कि प्रभावी आपदा प्रबंधन के साथ पर्यावरणीय संसाधनों का संरक्षण आपदा जोखिम को कम करने तथा सतत एवं सुरक्षित विकास को बढ़ावा देने में सहायक हो सकता है। यह अध्ययन नीति-निर्माताओं एवं स्थानीय समुदायों के लिए उपयोगी आधार प्रदान करता है।

निष्कर्ष

अध्ययन से स्पष्ट होता है कि आपदा प्रबंधन को केवल राहत एवं पुनर्वास तक सीमित न रखकर पूर्व तैयारी, जोखिम न्यूनीकरण एवं पर्यावरण संरक्षण से जोड़ना आवश्यक है। वनीकरण, जल एवं मृदा संरक्षण, वैज्ञानिक भूमि उपयोग नियोजन, GIS तकनीक तथा जनसहभागिता के माध्यम से आपदा जोखिम को कम करते हुए सतत विकास की दिशा में प्रभावी कदम उठाए जा सकते हैं।

21वीं सदी के शैक्षिक प्रतिमान: कृत्रिम बुद्धिमत्ता, जलवायु संकट और नव-सामाजिक अनुबंध

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वर्तमान वैश्विक चुनौतियाँ जैसे जलवायु परिवर्तन, कृत्रिम बुद्धिमत्ता का अभूतपूर्व विकास और गहरी होती सामाजिक-आर्थिक असमानता वैश्विक शिक्षा प्रणालियों में एक बुनियादी और परिवर्तनकारी बदलाव की मांग करती हैं। यूनेस्को की भविष्य की शिक्षा संबंधी रिपोर्ट इस बात पर जोर देती है कि शिक्षा के लिए एक नए सामाजिक अनुबंध की आवश्यकता है, जो आजीवन शिक्षा, समावेशिता, समानता और वैश्विक एकजुटता के स्तंभों पर आधारित हो। भविष्य की शिक्षा का मुख्य केंद्र विषय-वस्तु को रटने और शिक्षक-केंद्रित पारंपरिक मॉडल के बजाय योग्यता-आधारित और अनुभवजन्य शिक्षा पर होना चाहिए। भारत की राष्ट्रीय शिक्षा नीति दो हजार बीस इसी बहु-विषयक और छात्र-केंद्रित दृष्टिकोण का प्रमुखता से समर्थन करती है। ओईसीडी के दिशानिर्देशों के अनुसार, शिक्षा प्रणाली को छात्रों में स्वतंत्र निर्णय लेने की क्षमता और परिवर्तनकारी दक्षताओं का विकास करना चाहिए, जिससे वे सक्रिय रूप से समाज में सकारात्मक बदलाव ला सकें। इसके साथ ही, इक्कीसवीं सदी के अनिवार्य कौशल और सामाजिक-भावनात्मक शिक्षा का पाठ्यक्रम में एकीकरण मानसिक लचीलापन तथा सर्वांगीण विकास के लिए अत्यंत आवश्यक है। तकनीकी मोर्चे पर, कृत्रिम बुद्धिमत्ता का शैक्षिक एकीकरण सीखने की प्रक्रिया को सुलभ बनाता है। हालाँकि, शोध दर्शाते हैं कि इसके अनियंत्रित उपयोग से छात्रों में मानसिक निर्भरता बढ़ने और आलोचनात्मक सोच में भारी गिरावट का जोखिम है। इसलिए, शिक्षा में मानकीकृत परीक्षणों की जगह रचनात्मक मूल्यांकन और नैतिक व मानव-केंद्रित तकनीकी उपयोग का दृष्टिकोण अपनाना आवश्यक है। इसके अतिरिक्त, भविष्य की चुनौतियों को देखते हुए हरित शिक्षा के माध्यम से जलवायु साक्षरता को शिक्षा प्रणाली में शामिल करना पर्यावरणीय स्थिरता के लिए नितांत आवश्यक हो गया है। इन दूरदर्शी लक्ष्यों की प्राप्ति में सबसे बड़ी ढांचागत बाधा वैश्विक स्तर पर योग्य शिक्षकों की भारी कमी है। एक अनुमान के अनुसार, वर्ष दो हजार तीस तक दुनिया को चार करोड़ चालीस लाख अतिरिक्त शिक्षकों की आवश्यकता होगी। शिक्षा के इस नए प्रतिमान को यथार्थ में बदलने के लिए शिक्षकों के सशक्तिकरण और उनके निरंतर पेशेवर विकास हेतु वैश्विक स्तर पर भारी निवेश करना होगा।

“हिंदी साहित्य में नावाचार और सतत विकास की अवधारणा”

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प्राचीन भारतीय जीवन-दर्शन से लेकर समकालीन रचनाशीलता तक गहरे रूप में जुड़ी हुई हैं। साहित्य केवल मनोरंजन का साधन नहीं है, बल्कि यह समाज के नैतिक, सांस्कृतिक और पर्यावरणीय विवेक को जगाने का एक सशक्त माध्यम है।

प्राचीन एवं पारंपरिक साहित्य में सतत दृष्टि

वेद और उपनिषद: भारतीय संस्कृति में प्रकृति के प्रति सम्मान और संरक्षण का भाव वैदिक ऋचाओं में मिलता है, जहाँ पृथ्वी, जल, अग्नि और वन को देव-तुल्य मानकर उनके संतुलन की बात कही गई है।

भक्तिकालीन साहित्य: कबीर, सूरदास और तुलसीदास ने जल, वृक्ष और भूमि के महत्व को रेखांकित किया। गोस्वामी तुलसीदास ने ‘रामचरितमानस’ में वृक्षारोपण और प्रकृति के प्रति प्रेम का संदेश दिया।

दार्शनिक दृष्टि से मानव-केंद्रित अनुसंधान

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शोध-समस्या: वर्तमान वैज्ञानिक एवं तकनीकी युग में कृत्रिम बुद्धिमत्ता, डिजिटल प्रौद्योगिकी, जैव-प्रौद्योगिकी, स्वचालन तथा आँकड़ा-आधारित ज्ञान ने अनुसंधान की संभावनाओं का व्यापक विस्तार किया है। तथापि, इन तीव्र परिवर्तनों के साथ मानव गरिमा, स्वतंत्रता, निजता, समानता, न्याय, नैतिक उत्तरदायित्व तथा मानवीय मूल्यों से संबंधित अनेक नवीन प्रश्न भी उत्पन्न हुए हैं। प्रमुख समस्या यह है कि तकनीकी और आँकड़ा-आधारित अनुसंधान की तीव्र प्रगति के बीच मानव गरिमा, स्वतंत्रता, न्याय, निजता और सामाजिक उत्तरदायित्व को किस प्रकार अनुसंधान की केंद्रीय कसौटी बनाया जाए।

उद्देश्य: प्रस्तुत शोध का उद्देश्य मानव-केंद्रित अनुसंधान की अवधारणा का ज्ञानमीमांसात्मक, तार्किक एवं नैतिक दृष्टियों से विश्लेषण करना तथा उसके दार्शनिक आधारों और समकालीन प्रासंगिकता को स्पष्ट करना है। साथ ही, इसका लक्ष्य यह निर्धारित करना है कि अनुसंधान को केवल ज्ञान-विस्तार और तकनीकी प्रगति का साधन न मानकर मानव कल्याण एवं सामाजिक उत्तरदायित्व से किस प्रकार संबद्ध किया जा सकता है।

पद्धति: इस अध्ययन में वैचारिक-विश्लेषणात्मक एवं तुलनात्मक पद्धति का प्रयोग किया गया है। कांट, गांधी और भारतीय दर्शन की प्रमुख मूल्यपरक अवधारणाओं का आलोचनात्मक अध्ययन करते हुए मानव-केंद्रित अनुसंधान के सिद्धांतों का परीक्षण किया गया है। ज्ञानमीमांसा के माध्यम से ज्ञान की प्रकृति, सत्यता, प्रमाणिकता एवं सीमाओं का, तर्कशास्त्र के माध्यम से शोध की तार्किक संगति, वस्तुनिष्ठता एवं वैधता का तथा नैतिक दर्शन के माध्यम से अनुसंधान के उद्देश्यों, साधनों एवं परिणामों का मानव-मर्यादा, स्वतंत्रता, न्याय तथा सामाजिक उत्तरदायित्व के आधार पर विश्लेषण किया गया है।

प्रमुख निष्कर्ष: अध्ययन से यह निष्कर्ष प्राप्त होता है कि अनुसंधान की वास्तविक सार्थकता केवल नवीन ज्ञान या तकनीकी दक्षता में नहीं, बल्कि उसके मानवीय, न्यायपूर्ण, समावेशी और उत्तरदायी उपयोग में निहित है। कांट का मानव को “साध्य” मानने वाला नैतिक चिंतन, गांधी का मानव-कल्याण एवं अहिंसा पर आधारित दृष्टिकोण तथा भारतीय दर्शन की लोकसंग्रह, “सर्वे भवन्तु सुखिनः” और “वसुधैव कुटुम्बकम्” जैसी मूल्यपरक अवधारणाएँ मानव-केंद्रित अनुसंधान के लिए महत्वपूर्ण दार्शनिक आधार प्रस्तुत करती हैं। समकालीन संदर्भ में ऐसे अनुसंधान की आवश्यकता है, जो तकनीकी दक्षता के साथ मानवीय संवेदनशीलता, सामाजिक न्याय, पर्यावरणीय संतुलन और नैतिक उत्तरदायित्व को समान महत्व प्रदान करे। मानव-केंद्रित अनुसंधान का उद्देश्य केवल नवीन ज्ञान का निर्माण करना नहीं, बल्कि उस ज्ञान के विवेकपूर्ण एवं उत्तरदायी उपयोग को सुनिश्चित करना भी है, ताकि व्यक्ति की गरिमा सुरक्षित रहे और समाज के व्यापक कल्याण को प्रोत्साहन मिले।

मौलिक योगदान: इस शोध का मौलिक योगदान यह है कि यह ज्ञानमीमांसा, तर्कशास्त्र और नैतिक दर्शन को एकीकृत करते हुए मानव-केंद्रित अनुसंधान के लिए ऐसा समन्वित वैचारिक ढाँचा प्रस्तुत करता है, जिसमें ज्ञान की वैधता, तर्क की संगति और मानवीय कल्याणकृतीनों को समान रूप से आवश्यक माना गया है। यह ढाँचा अनुसंधान को “ज्ञान के लिए ज्ञान” की सीमित धारणा से आगे बढ़ाकर “मानव-कल्याण के लिए ज्ञान” की दिशा में उन्मुख करता है तथा तकनीकी प्रगति को मानवीय गरिमा, सामाजिक न्याय और नैतिक उत्तरदायित्व से जोड़ता है।

अतः दार्शनिक दृष्टि से मानव-केंद्रित अनुसंधान ज्ञान, नैतिकता और मानव-कल्याण के मध्य संतुलन स्थापित करने वाली ऐसी शोध-दृष्टि है, जो समकालीन अनुसंधान को अधिक मानवीय, नैतिक, आलोचनात्मक और उत्तरदायी बनाने के लिए एक सुदृढ़ वैचारिक आधार प्रदान करती है।

जलवायु परिवर्तन के समाधान में तकनीकी नवाचार: भारत के संदर्भ में

डॉ जगदीश

सहायक आचार्य, राजकीय महाविद्यालय उच्चैन, भरतपुर

जलवायु परिवर्तन 21वीं सदी की प्रमुख वैश्विक चुनौतियों में से एक है, जिसका प्रभाव भारत में कृषि, जल संसाधनों, जैव विविधता, ऊर्जा एवं आजीविका पर व्यापक रूप से दिखाई दे रहा है। इस चुनौती से निपटने में तकनीकी नवाचार जलवायु परिवर्तन के शमन और अनुकूलन दोनों के लिए महत्वपूर्ण साधन बनकर उभर रहा है। नवीकरणीय ऊर्जा, कृत्रिम बुद्धिमत्ता, जलवायु-स्मार्ट कृषि, हरित हाइड्रोजन, इलेक्ट्रिक मोबिलिटी तथा स्मार्ट जल प्रबंधन जैसी तकनीकें भारत के सतत विकास को नई दिशा प्रदान कर सकती हैं। यह शोध भारत के संदर्भ में जलवायु परिवर्तन से निपटने में तकनीकी नवाचार की भूमिका, संभावनाओं और चुनौतियों का विश्लेषण करता है। साथ ही, तकनीकी पहुँच, वित्तीय संसाधन, डिजिटल विभाजन, कौशल विकास और प्रभावी नीति-क्रियान्वयन जैसी चुनौतियों पर भी विचार किया गया है। अध्ययन का मुख्य तर्क है कि विज्ञान, प्रौद्योगिकी, नवाचार और सार्वजनिक नीति के समन्वय से भारत जलवायु-लचीली, समावेशी और सतत अर्थव्यवस्था की दिशा में प्रभावी रूप से आगे बढ़ सकता है।

इक्कीसवीं सदी के उपन्यासों में सामाजिक समरसता के वाहक पात्र

Rekha Jajoria

इक्कीसवीं सदी के हिंदी उपन्यासों में भारतीय समाज की बहुआयामी संरचना, बदलते सामाजिक संबंधों तथा समकालीन जीवन-मूल्यों का प्रभाव स्पष्ट रूप से दिखाई देता है। वैश्वीकरण, उदारीकरण, नगरीकरण, तकनीकी विकास और सामाजिक-आर्थिक परिवर्तन के साथ-साथ जाति, वर्ग, लिंग, धर्म, क्षेत्र तथा सांस्कृतिक विविधता से जुड़े प्रश्न भी साहित्य के केंद्र में आए हैं। ऐसे परिवेश में सामाजिक समरसता केवल एक आदर्श अवधारणा न रहकर सामाजिक जीवन की जटिलताओं से जुड़ा महत्वपूर्ण विमर्श बन गई है। प्रस्तुत शोध का उद्देश्य इक्कीसवीं सदी के चयनित हिंदी उपन्यासों में उन पात्रों का अध्ययन करना है, जो सामाजिक विभाजन, भेदभाव, पूर्वाग्रह और असमानताओं के विरुद्ध खड़े होकर समता, सह-अस्तित्व, संवेदना और मानवीय संबंधों को स्थापित करने में महत्वपूर्ण भूमिका निभाते हैं। ये पात्र विभिन्न सामाजिक, आर्थिक और सांस्कृतिक पृष्ठभूमियों से आते हुए भी संवाद, सहयोग, सहिष्णुता और मानवीय मूल्यों के माध्यम से सामाजिक समरसता के वाहक बनते हैं। प्रस्तुत अध्ययन में चयनित समकालीन हिंदी उपन्यासों के पात्रों का पाठ-विश्लेषण, चरित्र-विश्लेषण तथा तुलनात्मक अध्ययन किया जाएगा। शोध में यह देखने का प्रयास किया जाएगा कि उपन्यासकारों ने सामाजिक संघर्षों और विभाजनों को किस प्रकार चित्रित किया है तथा उनके बीच समरसता स्थापित करने वाले पात्रों की भूमिका किस प्रकार निर्मित की है। साथ ही, इन पात्रों के माध्यम से जातिगत एवं सामाजिक भेदभाव, लैंगिक असमानता, धार्मिक-सांस्कृतिक विविधता तथा हाशिए के समुदायों से जुड़े प्रश्नों को समझने का प्रयास किया जाएगा। अध्ययन का निष्कर्ष यह रेखांकित करता है कि समकालीन हिंदी उपन्यासों के ऐसे पात्र मानवीय संवेदना, समानता, सह-अस्तित्व और सामाजिक न्याय की चेतना को अभिव्यक्त करते हुए साहित्य में सामाजिक

समरसता की वैचारिक आधारभूमि को सुदृढ़ करते हैं। इस प्रकार, ये पात्र बदलते भारतीय समाज के लिए संवाद, सहिष्णुता और सामूहिकता के महत्वपूर्ण साहित्यिक प्रतीक के रूप में उभरते हैं।

राजस्थान में आध्यात्मिक पर्यटन एवं पर्यावरणीय चुनौतियाँ: एक अध्ययन

डॉ. महेंद्र कुमार वर्मा

सहायक आचार्य –व्यावसायिक प्रशासन, श्री रतनलाल कँवरलाल पाटनी, राजकीय स्नातकोत्तर महाविद्यालय, किशनगढ़ (अजमेर) राज.

आध्यात्मिक पर्यटन भारतीय पर्यटन व्यवस्था का एक महत्वपूर्ण एवं निरंतर विकसित होता हुआ क्षेत्र है। भारत की विविध धार्मिक एवं सांस्कृतिक परंपराओं के कारण देश के विभिन्न भागों में स्थित धार्मिक एवं आध्यात्मिक स्थल देशी-विदेशी पर्यटकों को आकर्षित करते हैं। राजस्थान अपनी ऐतिहासिक, सांस्कृतिक एवं धार्मिक विरासत के साथ-साथ आध्यात्मिक पर्यटन की दृष्टि से भी महत्वपूर्ण स्थान रखता है। अजमेर शरीफ, पुष्कर, नाथद्वारा, खाटू श्यामजी, सालासर बालाजी, मेहंदीपुर बालाजी, रामदेवरा तथा करणी माता मंदिर जैसे स्थल प्रतिवर्ष बड़ी संख्या में श्रद्धालुओं एवं पर्यटकों को आकर्षित करते हैं। आध्यात्मिक पर्यटन स्थानीय अर्थव्यवस्था, रोजगार तथा सांस्कृतिक संरक्षण में महत्वपूर्ण योगदान देता है, किंतु पर्यटकों एवं तीर्थयात्रियों की बढ़ती संख्या के कारण इन स्थलों पर अनेक पर्यावरणीय चुनौतियाँ भी उत्पन्न हो रही हैं। पर्यटन विकास को पर्यावरण संरक्षण एवं जलवायु-अनुकूल नियोजन के साथ जोड़ना आवश्यक है। ठोस अपशिष्ट, प्लास्टिक प्रदूषण, जल की बढ़ती मांग, वायु एवं ध्वनि प्रदूषण, यातायात दबाव तथा प्राकृतिक संसाधनों पर बढ़ता दबाव प्रमुख समस्याएँ हैं। इसके अतिरिक्त जलवायु परिवर्तन के कारण बढ़ता तापमान, जल-संकट, अनियमित वर्षा एवं चरम मौसमी घटनाएँ आध्यात्मिक पर्यटन की स्थिरता को प्रभावित कर रही हैं। अत्यधिक तापमान एवं जल संकट भविष्य में आध्यात्मिक पर्यटन के लिए महत्वपूर्ण चुनौतियाँ बन सकते हैं। स्थानीय समुदाय की भागीदारी के बिना सतत आध्यात्मिक पर्यटन का प्रभावी क्रियान्वयन कठिन हो सकता है। प्रस्तुत अध्ययन का उद्देश्य राजस्थान के प्रमुख आध्यात्मिक पर्यटन स्थलों के संदर्भ में पर्यावरणीय चुनौतियों का विश्लेषण करना तथा सतत आध्यात्मिक पर्यटन की संभावनाओं का अध्ययन करना है। अध्ययन में द्वितीयक स्रोतों, सरकारी रिपोर्टों, शोध-पत्रों एवं उपलब्ध साहित्य का उपयोग किया गया है। अध्ययन सतत अपशिष्ट प्रबंधन, जल संरक्षण, हरित ऊर्जा, पर्यावरण जागरूकता, सार्वजनिक परिवहन तथा स्थानीय समुदाय की सहभागिता को पर्यावरणीय चुनौतियों के समाधान हेतु महत्वपूर्ण मानता है।

भारतीय बैंकिंग क्षेत्र में कॉर्पोरेट सामाजिक उत्तरदायित्व की प्रथाएँ

डॉ. केतकी त्रिवेदी

सहायक प्राध्यापक एवं शोध निर्देशक, वाणिज्य विभाग, लोकमान्य तिलक विज्ञान एवं वाणिज्य महाविद्यालय, उज्जैन मध्य प्रदेश

काजल बौरासी

शोधार्थी, वाणिज्य अध्ययनशाला, सम्राट विक्रमादित्य विश्वविद्यालय उज्जैन मध्य प्रदेश

यह शोधपत्र भारत में बैंकिंग उद्योग द्वारा अपनाई जा रही कॉर्पोरेट सामाजिक उत्तरदायित्व की प्रथाओं का विश्लेषण प्रस्तुत करता है। वर्तमान वैश्वीकरण एवं प्रतिस्पर्धात्मक व्यावसायिक वातावरण में बैंकिंग संस्थाओं की भूमिका केवल वित्तीय सेवाओं के प्रदाता तक सीमित नहीं रह गई है, बल्कि वे सामाजिक एवं आर्थिक विकास के महत्वपूर्ण सहभागी के रूप में भी कार्य कर रहे हैं। कॉर्पोरेट सामाजिक उत्तरदायित्व एक ऐसी अवधारणा है, जिसके अंतर्गत व्यावसायिक संस्थाएँ अपने आर्थिक उद्देश्यों के साथ-साथ समाज, पर्यावरण तथा विभिन्न हितधारकों के प्रति अपनी सामाजिक जिम्मेदारियों का निर्वहन करती हैं। भारत में कॉर्पोरेट सामाजिक उत्तरदायित्व को संस्थागत स्वरूप प्रदान करने में कंपनी अधिनियम, 2013 की महत्वपूर्ण भूमिका रही है, जिसके अंतर्गत पात्र कंपनियों के लिए निर्धारित परिस्थितियों में कॉर्पोरेट सामाजिक उत्तरदायित्व गतिविधियों पर व्यय करना आवश्यक किया गया है। इस शोधपत्र का भारतीय बैंकिंग क्षेत्र में कॉर्पोरेट सामाजिक उत्तरदायित्व की वर्तमान स्थिति, प्रमुख कॉर्पोरेट सामाजिक उत्तरदायित्व

गतिविधियों, व्यय की प्राथमिकताओं तथा उनके सामाजिक प्रभाव का अध्ययन करना है। शोध में बैंक की कॉर्पोरेट सामाजिक उत्तरदायित्व गतिविधियों को तुलनात्मक आधार पर लिया गया है, ताकि सामाजिक उत्तरदायित्व संबंधी प्राथमिकताओं एवं कार्यप्रणाली में समानताओं और भिन्नताओं को समझा जा सके। भारतीय बैंकिंग क्षेत्र में कॉर्पोरेट सामाजिक उत्तरदायित्व गतिविधियाँ सामाजिक कल्याण के विभिन्न आयामों तक विस्तृत हो रही हैं तथा बैंक अपने कॉर्पोरेट सामाजिक उत्तरदायित्व कार्यक्रमों के माध्यम से शिक्षा, स्वास्थ्य, कौशल विकास, वित्तीय समावेशन और सामुदायिक विकास को बढ़ावा देने का प्रयास कर रहे हैं।

शिक्षा एवं शोध के क्षेत्र में कृत्रिम बुद्धिमत्ता

Anita Meena

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कृत्रिम बुद्धिमत्ता (Artificial Intelligence-AI) आधुनिक विज्ञान और प्रौद्योगिकी की एक महत्वपूर्ण उपलब्धि है। इसके माध्यम से कंप्यूटर और मशीनें मानव की तरह सीखने, भाषा को समझने, सूचनाओं का विश्लेषण करने, समस्याओं का समाधान करने तथा निर्णय लेने जैसे कार्य कर सकती हैं। वर्तमान समय में कृत्रिम बुद्धिमत्ता का प्रभाव शिक्षा और शोध के क्षेत्र में तेजी से बढ़ रहा है।

शिक्षा के क्षेत्र में AI

शिक्षा में कृत्रिम बुद्धिमत्ता का उपयोग शिक्षण प्रक्रिया को अधिक प्रभावी, तकनीकी, आधुनिक और सुविधाजनक बनाने के लिए किया जा रहा है। AI आधारित प्रणालियाँ विद्यार्थियों की सीखने की गति, रुचि और कठिनाइयों का विश्लेषण करके उनकी आवश्यकता के अनुरूप अध्ययन सामग्री उपलब्ध करा सकती हैं। इसे व्यक्तिगत शिक्षण (चमतेवद-संप्रमक Learning) कहा जाता है। AI आधारित चैटबॉट और वर्चुअल ट्यूटर विद्यार्थियों के प्रश्नों का उत्तर देने, कठिन विषयों को सरल भाषा में समझाने तथा अभ्यास कराने में सहायक हैं। शिक्षक भी AI की सहायता से पाठ-योजना, प्रश्न-पत्र, शिक्षण सामग्री और मूल्यांकन तैयार कर सकते हैं। AI शिक्षा को अधिक समावेशी बनाने में भी सहायक है। Speech to Text, Text & to & Speech और भाषा-अनुवाद जैसी तकनीकें दिव्यांग तथा विभिन्न भाषाई पृष्ठभूमि वाले विद्यार्थियों के लिए उपयोगी हैं।

शोध के क्षेत्र में AI

शोध कार्य में कृत्रिम बुद्धिमत्ता साहित्य-समीक्षा, सूचना-संग्रह, डेटा विश्लेषण और विषयगत प्रवृत्तियों की पहचान में महत्वपूर्ण भूमिका निभा रही है। शोधकर्ता विशाल मात्रा में उपलब्ध सूचनाओं में से प्रासंगिक सामग्री खोज सकते हैं तथा जटिल आँकड़ों का विश्लेषण अधिक तेजी से कर सकते हैं। सामाजिक विज्ञान और मानविकी में भी AI का उपयोग दस्तावेजों, पुस्तकों, समाचारों और अन्य डिजिटल स्रोतों के विश्लेषण में किया जा सकता है। AI के उपयोग के साथ सूचना की विश्वसनीयता, डेटा गोपनीयता, बौद्धिक संपदा, पक्षपात और अकादमिक ईमानदारी जैसी चुनौतियाँ भी हैं। AI द्वारा प्राप्त जानकारी का स्वतंत्र रूप से सत्यापन आवश्यक है। शोधकर्ता को स्रोतों का उचित उल्लेख करते हुए मौलिकता और शोध-नैतिकता बनाए रखनी चाहिए।

निष्कर्ष

कृत्रिम बुद्धिमत्ता शिक्षा और शोध को अधिक त्वरित, प्रभावी, व्यक्तिगत और विश्लेषणात्मक बनाने की व्यापक क्षमता रखती है। हालांकि, AI को शिक्षक या शोधकर्ता का पूर्ण विकल्प न मानकर एक सहायक तकनीक के रूप में प्रयोग करना चाहिए। मानवीय विवेक, आलोचनात्मक चिंतन, मौलिकता और नैतिक जिम्मेदारी के साथ AI का उपयोग शिक्षा एवं शोध के क्षेत्र में सकारात्मक परिवर्तन ला सकता है।

बड़वानी जिले में प्रवासी श्रमिकों से सूक्ष्म उद्यमियों तक ग्रामीण परिवारों में स्वरोजगार एवं सूक्ष्म उद्यमिता के अवसर और चुनौतियाँ का अध्ययन

डॉ. राहुल कौशल

सहायक प्राध्यापक एवं शोधनिर्देशक, वाणिज्य विभाग, शासकीय महाविद्यालय, जावरा मध्य प्रदेश

राजेश नरगाँवे

शोधार्थी, वाणिज्य अध्ययनशाला, सम्राट् विक्रमादित्य विश्वविद्यालय, उज्जैन मध्य प्रदेश

ग्रामीण क्षेत्रों में रोजगार के सीमित अवसर, कृषि पर बढ़ती निर्भरता, आय की अनिश्चितता तथा बेहतर आजीविका की तलाश ग्रामीण श्रमिकों को प्रवासन के लिए प्रेरित करती है। हालांकि, प्रवासन केवल रोजगार प्राप्त करने का माध्यम नहीं है, बल्कि यह श्रमिक परिवारों में कौशल, कार्य-अनुभव, बचत, बाजार की समझ और आर्थिक संसाधनों के विकास का अवसर भी उत्पन्न कर सकता है। ऐसे में प्रवासी श्रमिकों का स्वरोजगार एवं सूक्ष्म उद्यमिता की ओर उन्मुख होना ग्रामीण आर्थिक विकास और आत्मनिर्भरता की दृष्टि से महत्वपूर्ण है। प्रस्तुत अध्ययन का उद्देश्य बड़वानी जिले के प्रवासी श्रमिक परिवारों में स्वरोजगार एवं सूक्ष्म उद्यमिता की संभावनाओं का विश्लेषण करना तथा उद्यम स्थापना को प्रभावित करने वाले प्रमुख अवसरों एवं चुनौतियों की पहचान करना है। अध्ययन में वित्तीय संसाधनों की उपलब्धता, कौशल, उद्यमिता अभिरुचि, बाजार की जानकारी, ऋण तक पहुँच, सरकारी योजनाओं की जानकारी, परिवार का सहयोग तथा प्रवासन से प्राप्त कार्य-अनुभव को प्रमुख कारकों के रूप में शामिल किया है। अध्ययन में यह समझना है कि प्रवासी श्रमिक परिवारों को संभावित सूक्ष्म उद्यमियों में परिवर्तित करने में कौन-से कारक सहायक अथवा बाधक हैं। शोध ग्रामीण स्वरोजगार, सूक्ष्म उद्यमिता, वित्तीय समावेशन एवं प्रवासी श्रमिकों के आर्थिक पुनर्वास हेतु नीतिगत सुझाव प्रदान करने में उपयोगी है।

उज्जैन जिले में स्वयं सहायता समूहों के माध्यम से महिला सूक्ष्म उद्यमों के विकास की संभावनाओं का अध्ययन

डॉ. नितिशा तोषनीवाल

सहायक प्राध्यापक एवं शोधनिर्देशक, लोकमान्य तिलक विज्ञान एवं वाणिज्य महाविद्यालय, उज्जैन मध्य प्रदेश

अर्जुन राठौर

शोधार्थी, वाणिज्य अध्ययनशाला, सम्राट् विक्रमादित्य विश्वविद्यालय, उज्जैन मध्य प्रदेश

स्वयं सहायता समूह ग्रामीण एवं अर्धशहरी क्षेत्रों की महिलाओं को वित्तीय संसाधनों, सामूहिक सहयोग, कौशल विकास तथा स्वरोजगार के अवसर उपलब्ध कराने में महत्वपूर्ण भूमिका निभाते हैं। वर्तमान समय में स्वयं सहायता समूह केवल बचत एवं ऋण की गतिविधियों तक सीमित न रहकर महिला सूक्ष्म उद्यमिता के विकास का प्रभावी माध्यम बन रहे हैं। प्रस्तुत अध्ययन में उज्जैन जिले में स्वयं सहायता समूहों के माध्यम से संचालित महिला सूक्ष्म उद्यमों की वर्तमान स्थिति, विकास की संभावनाओं तथा प्रमुख चुनौतियों का विश्लेषण करना है। अध्ययन में महिलाओं की उद्यमिता, वित्तीय समावेशन, ऋण की उपलब्धता, कौशल एवं प्रशिक्षण, डिजिटल भुगतान, विपणन व्यवस्था तथा बाजार तक पहुँच जैसे प्रमुख आयामों को सम्मिलित किया गया है। अध्ययन से यह स्पष्ट करने का प्रयास किया गया है कि स्वयं सहायता समूह महिलाओं में आर्थिक आत्मनिर्भरता, रोजगार सृजन एवं उद्यमशीलता की भावना को किस प्रकार बढ़ावा देते हैं। साथ ही, वित्तीय संसाधनों, बाजार, तकनीकी ज्ञान एवं डिजिटल साधनों से संबंधित बाधाओं की पहचान कर महिला सूक्ष्म उद्यमों के सतत विकास हेतु आवश्यक सुझाव प्रस्तुत किए गए हैं।

जनभागीदारी और सुशासन : लोकतांत्रिक शासन में नागरिकों की भूमिका**डॉ. नीतू चौधरी**

सहायक आचार्य, राजनीति विज्ञान, राजकीय महाविद्यालय, टोंक

लोकतांत्रिक शासन व्यवस्था की सफलता केवल चुनावों और प्रतिनिधि संस्थाओं तक सीमित नहीं होती, बल्कि शासन प्रक्रिया में नागरिकों की सक्रिय एवं सार्थक भागीदारी भी इसके लिए आवश्यक है। प्रस्तुत शोध “जनभागीदारी और सुशासन : लोकतांत्रिक शासन में नागरिकों की भूमिका” में लोकतांत्रिक शासन में नागरिक सहभागिता के महत्व का विश्लेषण किया गया है। जनभागीदारी के माध्यम से नागरिक नीति-निर्माण, निर्णय प्रक्रिया, विकास कार्यक्रमों के क्रियान्वयन तथा प्रशासन की निगरानी में अपनी भूमिका निभाते हैं। यह सहभागिता शासन में पारदर्शिता, जवाबदेही, उत्तरदायित्व और प्रभावशीलता को बढ़ाने में सहायक हो सकती है। इस अध्ययन में मतदान, जनसुनवाई, ग्राम-सभा, पंचायती राज संस्थाओं, सामाजिक अंकक्षण, नागरिक संगठनों तथा डिजिटल प्लेटफॉर्म के माध्यम से होने वाली नागरिक सहभागिता का विश्लेषण किया गया है साथ ही राजनीतिक उदासीनता सामाजिक एवं आर्थिक असमानता, सूचना की कमी तथा डिजिटल विभाजन जैसी चुनौतियों को भी अध्ययन का हिस्सा बनाया गया है। अध्ययन का प्रमुख उद्देश्य यह समझना है कि नागरिकों की सक्रिय भागीदारी किस प्रकार लोकतांत्रिक संस्थाओं को अधिक नागरिक-केन्द्रित और उत्तरदायी बनाने में योगदान देती है। शोध का निष्कर्ष यह इंगित करता है कि जागरूक नागरिक सहभागिता, पारदर्शी संस्थागत व्यवस्था और प्रभावी संवाद के माध्यम से सुशासन को अधिक मजबूत बनाया जा सकता है।

राजस्थान की प्रशासनिक व्यवस्था में कौटिल्य के सुशासन सिद्धान्तों की प्रासंगिकता**डॉ. मनोज कुमार त्रिपाठी**

सह-आचार्य- राजनीति विज्ञान, कला एवम् सामाजिक विज्ञान संकाय, स्वामी विवेकानन्द सुभारती विश्वविद्यालय, मेरठ, उत्तर प्रदेश

सुश्री ज्योति शर्मा

शोधार्थिनी राजनीति विज्ञान, कला एवम् सामाजिक विज्ञान संकाय, स्वामी विवेकानन्द सुभारती विश्वविद्यालय, मेरठ, उत्तर प्रदेश

राजनीति एवं प्रशासनिक चिंतन में कौटिल्य की रचना शासन-व्यवस्था वित्तीय प्रबन्धन, लोक कल्याण और प्रशासनिक जवाबदेही का महत्वपूर्ण ग्रन्थ माना गया है। कौटिल्य का अर्थशास्त्र राज्य की दृष्टि से महत्वपूर्ण ग्रन्थ माना गया है। कौटिल्य ने राज्य को केवल राजनीतिक सत्ता का माध्यम न मानकर उसे सामाजिक स्थिरता का उत्तरदायी संस्थान माना। कौटिल्य का राज्य के दृष्टि कोण से मुख्य उद्देश्य योगक्षेम अर्थात् प्रजा की सुरक्षा एवं समृद्धि करना को माना है। सुव्यवस्थित शासन के लिए दायित्वनिष्ठ प्रशासन, योग्य अधिकारीगण, भ्रष्टाचार-निरोध, प्रभावी वित्तीय व्यवस्था, विधि आधारित न्यायपूर्ण शासन व्यवस्था पर बल दिया गया है। लोकतांत्रिक व्यवस्था के समकालीन चरण में इन सिद्धान्तों की झलक देखने को मिलती है। वर्तमान में सुशासन की अवधारणा सम्पूर्ण विश्व के स्तर पर प्रशासनिक व्यवस्थाओं का आधार बन चुकी है।

भारत में यूपीआई पर मर्चेंट डिस्काउंट रेट (MDR) के सकारात्मक एवं नकारात्मक प्रभावों आर्थिक, सामाजिक एवं जन-विरोध के संदर्भ में एक विश्लेषणात्मक अध्ययन**Dr. Hargovind Kharera**

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भारत में डिजिटल भुगतान व्यवस्था के तीव्र विस्तार में नेशनल पेमेंट्स कॉरपोरेशन ऑफ इंडिया द्वारा विकसित यूपीआई के परम्भिक चरण में भारत के 20 सदस्य बैंकों ने 30, अप्रैल 2016 से यूनिकाइड पेमेंट्स इंटरफेस को प्रारंभ करने में ने महत्वपूर्ण भूमिका निभाई जो वर्तमान में हर दुकानदार एवं हर ग्राहक की प्रथम पसंद एवं आवश्यकता बन

गया है। यूपीआई ने बैंक खातों के मध्य से तत्काल धन अंतरण, क्यूआर-कोड आधारित भुगतान तथा व्यापारी भुगतान को सरल बनाया है। इसके परिणामस्वरूप डिजिटल भुगतान भारत की दैनिक आर्थिक गतिविधियों का महत्वपूर्ण हिस्सा साबित हो रहा है। यूपीआई के व्यापक विस्तार के साथ इसके संचालन, तकनीकी अवसंरचना, साइबर सुरक्षा तथा भुगतान सेवा प्रदाताओं की आर्थिक स्थिरता से संबंधित आवश्यकता महत्वपूर्ण है। इसी संदर्भ में 15 सितंबर, 2026 में चयनित व्यक्ति-से-व्यापारी (P2M) यूपीआई लेन-देन पर मर्चेन्ट डिस्काउंट रेट की व्यवस्था घोषित की गई जिसके अंतर्गत ₹ 2,000 से अधिक के निर्धारित व्यापारी लेन-देन पर 0.4 प्रतिशत पर मर्चेन्ट डिस्काउंट रेट लागू किया जाना प्रस्तावित है। व्यक्ति-से-व्यक्ति (P2P) लेन-देन तथा ₹ 2,000 तक के पात्र व्यापारी भुगतान और निर्धारित छोटे व्यापारियों के लेन-देन को इससे बाहर रखा गया है। सरकार के अनुसार लगभग 96 प्रतिशत P2M लेन-देन इस परिवर्तन से अप्रभावित रहेंगे। इस संदर्भ में व्यापारी संगठनों ने तर्क दिया है कि मर्चेन्ट डिस्काउंट रेट लागू करने से कम लाभांश वाले व्यापारियों की लागत बढ़ सकती है और इसका अप्रत्यक्ष भार उपभोक्ताओं पर पड़ने की संभावना है। सितंबर 2026 में अनेक व्यापारी संगठनों ने 2, अक्टूबर 2026 को छव न्च क्ल मनाने की घोषणा भी की है। अतः प्रस्तुत अध्ययन डक्ट को केवल शुल्क निर्धारण के विषय के रूप में न देखकर डिजिटल भुगतान की वित्तीय स्थिरता, व्यापारी लागत, उपभोक्ता हित, डिजिटल वित्तीय समावेशन तथा जन प्रतिक्रिया के समग्र संदर्भ में विश्लेषित करता है।

राजस्थान में जल संसाधन संरक्षण— आव यकता एवं संरक्षण के उपाय

डॉ. धर्मेन्द्र पाटीदार

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जल ही जीवन है तथा यह जल प्रगति का आधार है। जल ऐसा प्राकृतिक संसाधन है जिस पर मानव, वनस्पति, जीव-जन्तु आदि निर्भर है। राजस्थान जैसे भुश्क एवं अर्द्धशुष्क प्रदेश के लिए जल का महत्व और भी अधिक है। यहां औसत वार्षिक वर्षा 57.51 सेंटीमीटर है। यहां भारत के कुल जल संसाधन का तीन प्रतिशत भाग पाया जाता है। राजस्थान में जल संसाधन के रूप में नदियां, झीलें, तालाब एवं भू-जल प्रमुख हैं जिससे संपूर्ण प्रदेश में जलापूर्ति होती है। साथ ही नहरों के माध्यम से भी विविध कार्यों हेतु जल की आपूर्ति की जाती है। राज्य में जल संसाधन सीमित होते हुए भी जल प्रबंधन एवं जल संरक्षण के माध्यम से जलापूर्ति में सुधार किया जा सकता है। राजस्थान के जल संसाधनों को दो भागों में बांटकर अध्ययन किया जा सकता है। पहले भाग में सतही जल तथा दूसरे भाग में भूमिगत जल के रूप में बांटा जा सकता है। सतही जल में नदियों, झीलों, तालाबों आदि को सम्मिलित किया जाता है। ये प्राकृतिक स्रोत हैं परन्तु वर्तमान में इन प्राकृतिक स्रोतों के साथ साथ नहरों आदि के माध्यम से भी जलापूर्ति की जा रही है। साथ ही राज्य में भूमिगत जल का उपयोग भी प्राचीन समय से होता आ रहा है। किन्तु राज्य में भूमिगत जल की उपलब्धता सीमित होने के साथ जल का स्तर भी नीचा है। प्रदेश में भूमिगत जल का उपयोग कुओं, नलकूपों आदि के माध्यम से किया जाता है। बढ़ती हुई जनसंख्या तथा आर्थिक क्रिया कलापों में वृद्धि के साथ साथ जल की आवश्यकता में भी वृद्धि होती जा रही है किन्तु राज्य में जल की सीमित उपलब्धता, वर्षा में कमी, भूमिगत जल स्तर में गिरावट, बढ़ते जल प्रदूषण आदि के कारण आने वाले समय में यदि जल के संरक्षण की ओर ध्यान नहीं दिया गया तो राज्य में जल संकट की स्थिति उत्पन्न हो सकती है। अतः हमें समय रहते जल संरक्षण की परम्परागत और आधुनिक तकनीक को अपनाते हुए इस अनमोल प्राकृतिक संसाधन का संरक्षण करना अति आव यक है।

भारत में लैंगिक समानता और सामाजिक न्याय: एक समाजशास्त्रीय परिप्रेक्ष्य

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भारत जैसे विविधतापूर्ण समाज में लैंगिक समानता और सामाजिक न्याय समावेशी विकास, मानव गरिमा तथा समान अवसरों की आधारभूत शर्तें हैं। प्रस्तुत अध्ययन भारत में लैंगिक असमानता और सामाजिक न्याय के अंतर्संबंधों का समाजशास्त्रीय विश्लेषण प्रस्तुत करता है। भारतीय सामाजिक संरचना में पितृसत्ता, जाति, वर्ग, धर्म तथा ग्रामीण-शहरी

विभाजन ने महिलाओं की सामाजिक स्थिति, अवसरों और संसाधनों तक पहुँच को प्रभावित किया है। लैंगिक असमानता केवल महिलाओं और पुरुषों के बीच अधिकारों के अंतर तक सीमित नहीं है, बल्कि शिक्षा, रोजगार, स्वास्थ्य, संपत्ति, राजनीतिक सहभागिता, निर्णय-निर्माण तथा सामाजिक सम्मान में असमान अवसरों के रूप में भी दिखाई देती है। अध्ययन का उद्देश्य यह समझना है कि परिवार, विवाह, शिक्षा, श्रम बाजार, राजनीतिक संस्थाएँ तथा सामाजिक-सांस्कृतिक मान्यताएँ किस प्रकार लैंगिक भूमिकाओं, व्यवहारों और अवसरों को निर्धारित करती हैं। पारंपरिक लैंगिक भूमिकाएँ, असमान श्रम-विभाजन, वेतन-अंतर, लैंगिक हिंसा, दहेज, बाल विवाह तथा आर्थिक संसाधनों तक सीमित पहुँच सामाजिक न्याय की स्थापना के समक्ष महत्वपूर्ण चुनौतियाँ हैं। जाति, वर्ग और क्षेत्रीय स्थिति जैसे कारक इन असमानताओं को और जटिल बनाते हैं। भारतीय संविधान में समानता और गैर-भेदभाव के प्रावधानों तथा महिलाओं की सुरक्षा और अधिकारों से संबंधित विभिन्न कानूनों और कल्याणकारी नीतियों ने लैंगिक न्याय के लिए महत्वपूर्ण संस्थागत आधार प्रदान किया है। इसके बावजूद कानूनी प्रावधानों का प्रभावी क्रियान्वयन, सामाजिक जागरूकता और संस्थागत उत्तरदायित्व आवश्यक हैं। शिक्षा, आर्थिक आत्मनिर्भरता, स्वास्थ्य, राजनीतिक प्रतिनिधित्व और सुरक्षित सामाजिक वातावरण लैंगिक समानता को सुदृढ़ करने में महत्वपूर्ण भूमिका निभाते हैं। निष्कर्षतः, समाजशास्त्रीय दृष्टिकोण से लैंगिक समानता को केवल कानूनी अधिकार के रूप में नहीं, बल्कि सामाजिक संरचनाओं, सांस्कृतिक मूल्यों और शक्ति-संबंधों में परिवर्तन की निरंतर प्रक्रिया के रूप में समझना आवश्यक है। समान अवसर, सामाजिक सम्मान, सहभागिता और संसाधनों तक न्यायपूर्ण पहुँच सुनिश्चित करके ही समावेशी, न्यायपूर्ण और समानतापूर्ण समाज का निर्माण संभव है।

आधुनिक चिकित्सा पद्धतियों का बदलता स्वरूप

डॉ. सुमित मेहता

सहायक आचार्य, राजकीय कला महाविद्यालय, सीकर

आज के समय में पारंपरिक चिकित्सा प्रणाली को पीछे छोड़कर नई तकनीकों ने स्वास्थ्य सेवा को अधिक आसान एवं बेहतर बना दिया है। डिजिटल स्वास्थ्य चिकित्सा क्षेत्र में एक बहुत बड़ा बदलाव है। नई तकनीकों से इलाज भीघ्न एवं सरल हो रहा है। डिजिटल स्वास्थ्य के अन्तर्गत मोबाइल ऐप, टेलीमेडिसिन, ई-संजीवनी, इलेक्ट्रॉनिक स्वास्थ्य रिकॉर्ड और स्मार्टवॉच, फिटनेस बैंड जैसे उपकरण शामिल हैं। इन उपकरणों की मदद से मरीज दिल की धड़कन, ब्लड ऑक्सीजन आदि पर खुद नजर रख सकते हैं। डॉक्टर भी दूर से मोबाइल के माध्यम से ही परामर्श दे सकते हैं। इससे समय बचता है और सुविधा बढ़ती है। बुजुर्ग लोग एवं ग्रामीण क्षेत्रों में भी लोग मोबाइल की सहायता से ऑनलाइन इलाज पा सकते हैं। भारत सरकार के डिजिटल स्वास्थ्य मिशन के तहत बनाया गया आयुश्मान भारत स्वास्थ्य खाता (ABHA) आपके सेहत से जुड़े इतिहास को डिजिटल रूप से सुरक्षित रखता है। स्वास्थ्य क्षेत्र में नवाचार के अन्तर्गत आधुनिक तकनीकों, नए उपकरणों एवं बेहतर कार्यप्रणालियों के उपयोगों से मरीजों को अधिक तेज एवं सस्ता इलाज उपलब्ध हो रहा है। आर्टिफिशियल इंटेलिजेंस से भुरुआती स्टेज में ही कैंसर जैसी बिमारियों का पता लगाया जा सकता है। रोबोटिक सर्जरी की सहायता से बहुत ही कठिन ऑपरेशनों को सटीकता से करना संभव हुआ है। डिजिटल स्वास्थ्य से लोगों की स्वास्थ्य प्रणाली में सुधार आ रहा है। दवाओं और रिपोर्टों का रिकॉर्ड सुरक्षित रहता है एवं मरीज और डॉक्टर दोनों को सही जानकारी प्राप्त होती है। डिजिटल माध्यम से आम लोगों की बीच स्वास्थ्य शिक्षा और जागरूकता बढ़ रही है। अब बड़े चिकित्सकों का इलाज सिर्फ बड़े भाहरों तक सीमित ना होकर समाज के हर वर्ग एवं गांवों तक पहुंच रहा है।

हिन्दी सिनेमा में सामाजिक चेतना

डॉ. उमेश कुमार

सह आचार्य हिन्दी, राजकीय कन्या महाविद्यालय, चोमू, जयपुर (राज.)

लोकप्रिय सिनेमा भारतीय समाज का दर्पण है। लेकिन फिल्मों में सामाजिक जीवन की यथार्थ तस्वीर और खुशहाल जिंदगी दिखाने के बजाय हिंसा और विलासिता को ही अधिक दिखाया जाता है। प्रतिशोध और प्रतिहिंसा

आधारित फिल्मों में यही दिखाने का प्रयास होता है कि अन्याय और अत्याचार का मुकाबला केवल प्रतिशोध और प्रतिहिंसा से ही संभव है। लोगों की सामूहिक और विवेकपूर्ण पहल और प्रतिरोध और विरोध के लोकतांत्रिक तरीकों से अन्याय और अत्याचार का मुकाबला संभव है। लोकप्रिय सिनेमा इस विचार को नजरअंदाज कर देता है। सत्तर और अस्सी के दशक में वैयक्तिक प्रतिहिंसा को फिल्मों में एक फार्मूले के रूप में लेना शुरू कर दिया था। अमिताभ बच्चन के नायकत्व वाली फिल्मों में यह फार्मूला शिखर पर था। ऐसी फिल्में लोगों में यह दुष्प्रचार करती हैं कि ऐसा कोई लोकतांत्रिक तरीका नहीं है। जिससे अन्याय और अत्याचार का मुकाबला किया जा सके। इस दौर की फिल्में प्रत्यक्ष और अप्रत्यक्ष तौर पर एक तरफ उच्च वर्ग की परिवार आधारित भावनात्मक समस्याओं को विषयवस्तु बना रही हैं तो दूसरी तरफ समाज के अपराधीकरण और सैन्यीकरण को महिमामंडित कर रही हैं। भूमंडलीकरण के इस दौर में अपराध एक संस्था का रूप ले चुका है। पिछले कुछ दशकों में ऐसी अधिकांश फिल्में निर्मित हुई हैं। इनमें माफिया गिरोहों की करतूतों का बहुत कुछ यथार्थपरक प्रस्तुतीकरण हुआ है।

शिक्षा और अनुसंधान में आर्टिफिशियल इंटेलिजेंस (AI) की भूमिका और प्रभाव

मीरा बाई मीना

सहायक आचार्य, संस्कृत, स्व. राजेश पायलट राजकीय महाविद्यालय, बांदीकुई, दौसा, राजस्थान।

वर्तमान डिजिटल युग में आर्टिफिशियल इंटेलिजेंस (AI) शिक्षा और अनुसंधान के क्षेत्र में महत्वपूर्ण परिवर्तन ला रहा है। AI आधारित तकनीकों के माध्यम से विद्यार्थियों को व्यक्तिगत एवं त्वरित सीखने की सुविधा मिल रही है तथा शिक्षकों के लिए शिक्षण सामग्री तैयार करना, मूल्यांकन करना और विद्यार्थियों की प्रगति का विश्लेषण करना अधिक सरल हुआ है। अनुसंधान के क्षेत्र में AI विशाल मात्रा में आँकड़ों के विश्लेषण, सूचना के संकलन, शोध-पद्धति में सहायता तथा नए निष्कर्षों की पहचान में उपयोगी सिद्ध हो रहा है। हालांकि, AI के बढ़ते उपयोग के साथ डेटा गोपनीयता, नैतिकता, मौलिकता, गलत सूचना और तकनीक पर अत्यधिक निर्भरता जैसी चुनौतियाँ भी सामने आती हैं। अतः शिक्षा और अनुसंधान में AI का उपयोग मानव बुद्धि, नैतिक मूल्यों और उचित मार्गदर्शन के साथ संतुलित रूप से किया जाना आवश्यक है। इस प्रकार, AI शिक्षा और अनुसंधान की गुणवत्ता, गति और प्रभावशीलता को बढ़ाने की अपार क्षमता रखता है।

समकालीन हिन्दी कविता और पर्यावरण बोध

डॉ. गजेन्द्र मोहन

आचार्य – हिन्दी, सम्राट पृथ्वीराज चौहान राजकीय महाविद्यालय, अजमेर, राजस्थान।

पर्यावरण हमारे चारों ओर का वह स्थान है जिसका हमारे अस्तित्व, जीवनचर्या और विकास आदि पर सीधा सीधा प्रभाव पड़ता है। सामान्य तौर पर कहा जाए तो पर्यावरण हमारा जीवनदाता है। प्रकृति ने वरदान स्वरूप हमें पर्यावरण दिया है। यह हमारा पालन पोषण करता है और जीवन को सुगम बनाकर हमें सुदृढ़ आधार प्रदान करता है। हमें स्वस्थ और सुखमय बनाये रखने का सुरक्षा कवच पर्यावरण ही है। यदि हमारा यह सुरक्षा कवच विषयुक्त हो जाए तो अभिशाप बनकर जीवन का संहारक बन जाएगा। इसलिए पर्यावरण के प्रति हमारे कर्तव्यों को हमें जानना होगा। अन्यथा वह दिन दूर नहीं जब हम इस पृथ्वी के विनाशक बन जायेंगे। समकालीन हिन्दी कवि पर्यावरण प्रदूषण के प्रति चिंता करता है और अपनी कविता में इस चिंता को समाहित भी करता है। हमारे प्राचीन ग्रंथ जैसे रामायण, महाभारत, गीता, पुराण, वेद, उपनिषद तथा कुरान, बाइबिल, श्रीगुरु ग्रन्थ साहब तथा अन्य धार्मिक ग्रन्थ, पेड़-पौधे, जीव-जन्तुओं पर दया करने की सीख देते हैं। यदि ध्यान से इन शास्त्रों की बातों को पढ़ा तथा सुना जाय तो मानव से इनका सम्बन्ध अन्तरंग है और इनके विनाश की बात तो सोची भी नहीं जा सकती। मानसिक शान्ति, शारीरिक सुख, इन सबकी पूर्ति के मुख्य साधन प्राकृतिक सम्पदा ही है। हमारे खाद्य पदार्थों तथा वनस्पति को संरक्षित रखने के उद्देश्य से इन्हें किसी न किसी दिन, त्योहार, देवी-देवताओं की पूजा-अर्चना से जोड़ा गया है। औषधि के रूप में फलों तथा जड़ी-बूटियों की रक्षा करने की बात कही गयी है और इन्हें घरों के निकटस्थ लगाकर पर्यावरण को स्वच्छ रखने की सलाह दी गयी है।

पशु पक्षियों के साथ रहते हुए ही हमने प्रकृति को देवी स्वरूपा माना है। भूमि की माँग को पूरा करने के लिए हरे भरे वनों उपवनों, खेत-खलिहानों आदि को काट डाला गया और जहाँ भूमि शस्य श्यामला थी, वहाँ कंकरीट के जंगल खड़े कर दिए गए। हरी भरी धरती और उपजाऊ भूमि को उजाड़कर विशाल गगनचुम्बी इमारतों ने वायु मार्ग को अवरुद्ध कर दिया और हमने प्राणदायी वायु को अपने ही हाथों अवरुद्ध कर अपने लिए अनेकानेक भयावह रोगों को निमन्त्रण दे दिया। समकालीन कवि इस भयावहता को समझने में देर नहीं करता। वह अपनी लेखनी के माध्यम से चेतना जागृत करता है। पृथ्वी पर बाढ़, भूकंप, हिमस्खलन, तूफान आदि प्राकृतिक आपदाओं का आना बढ़ गया है। इसलिए कवि भी चेतावनी देता है कि यदि हम समय रहते नहीं चेते तो भयानक परिणाम झेलने पड़ेंगे। भारत में पवित्र नदी गंगा तक को नहीं छोड़ा गया। उसके जल में भी विष घुल गया सा प्रतीत हो रहा है। समकालीन कवि को इन सब के बारे में जानकारी है, वह अपनी कविता में इसका यथार्थ वर्णन करता है। फिर भी वह अपनी कविता में पर्यावरण संरक्षण के संदेश को व्यक्त करता है और इस घुटन भरे माहौल को दूर कर प्रकृति से जुड़ कर नवजीवन की शुरुआत करने की बात करता है। अतः वर्तमान में भी कवियों की आस्था पर्यावरण बोध से गहरे से जुड़ी हुई है। हमें भी प्रयास करना होगा कि पर्यावरण संरक्षण की शिक्षा बचपन से ही आरम्भ की जाए और लोगों के मन में विश्वास कायम किया जाए, जब एक अबोध बालक अपने आस-पास की नैसर्गिक सुन्दरता से अति प्रसन्न होता है, तो एक परिपक्व मस्तिष्क उसके विनाश की बात क्यों सोचता है। इसलिए हमें यह प्रयास करना चाहिए कि हम लोगों को ज्यादा से ज्यादा प्राकृतिक सुन्दरता का अनुसरण कराएँ और इससे सम्बन्धित ज्ञान दें और उन्हें इस बात से परिचित कराएँ कि हम चारों ओर से पर्यावरण के द्वारा प्रदान किये गये सुरक्षा कवच से घिरे हैं तो हमें इस कवच में सुराख करने की कभी भी नहीं सोचनी चाहिए, अपितु उसे मजबूती प्रदान करनी चाहिए। तभी हम अपने पर्यावरण के प्रति अपनी सोच और कर्तव्य का ईमानदारी से निर्वहन कर पाएँगे।

भक्ति आन्दोलन एवं संत दादू दयाल का समाज दर्शन

डॉ विनोद मील

एसोसिएट प्रोफेसर, हिन्दी विभाग एस.के.डी. विश्वविद्यालय हनुमानगढ़.

संत दादू दयाल ने सती प्रथा और पर्दा प्रथा पर आलोचना की और हिन्दू-मुस्लिम समन्वय के लिए अपील की। संत दादू दयाल का उद्देश्य पवित्र और सन्तुलित जीवन जीने का संदेश देना था। एक जीवन जो स्वाभाविक हो, जिसमें कोई आडम्बर न हो, बन्धुत्व और पारस्परिक सद्भाव के साथ आचारगत एवं आन्तरिक पवित्रता का अभाव न हो। इस प्रकार, मध्ययुगीन सुधारकों में संत दादू दयाल का स्थान बहुत उच्च है। भारतीय धर्म साधना के इतिहास में सन्त दादू दयाल का समाज दर्शन अपना एक विशिष्ट स्थान रखता है। संत दादू दयाल ने कई धार्मिक एवं बौद्धिक परिस्थितियों का सामना करते हुए, समानता और सहयोग के सिद्धांत पर चलते हुए, पूरे राजपूताना को प्रभावित किया। धर्म का मूल रूप बाहरी सजावटों में छिप रहा था। ऐसी विषम घड़ी में दादू दयाल के समाज दर्शन ने आम जनता में नई ऊर्जा का प्रचार किया। मध्ययुग में राजपूताना की सामाजिक एवं धार्मिक स्थिति गिरते हुए थी। समाज में विभिन्न प्रकार की सामाजिक एवं धार्मिक गलतियों का विकास होने लगा था, जो हिन्दू समाज को अस्थिर बना रही थी। राजपूताना में सती, बलि, पर्दा, बहुविवाह और जौहर जैसी प्रथाओं के कारण सामाजिक व्यवस्था अस्थिर और झकझोर रही थी। इस संक्रमण और परिवर्तन के काल में, सन्त दादू दयाल ने आम जनता को अन्धकार, निराशा और विषमता से बाहर निकालकर प्रकाश की ओर बढ़ना सिखाया और जीवन में आशा का संचार किया। सन्त दादू दयाल विनम्र, उदार, मृदुभाषी और सरल व्यक्तित्व के मालिक थे, जिस कारण उनके समाज दर्शन को तत्त्वयुगीन समाज में राजपूताना में सबसे अधिक स्वीकार्यता मिली है।

आपदा प्रबंधन एवं पर्यावरण संरक्षण में नगर निगमों की भूमिका: एक विश्लेषणात्मक अध्ययन**हरवीर सिंह**

सहायक आचार्य लोक प्रशासन, महारानी श्रीजया राजकीय महाविद्यालय, भरतपुर (राज.)

वर्तमान समय में तीव्र शहरीकरण, जनसंख्या वृद्धि, अनियोजित नगरीय विस्तार तथा जलवायु परिवर्तन के कारण शहरों में विभिन्न प्रकार की प्राकृतिक एवं मानवजनित आपदाओं का जोखिम बढ़ रहा है। बाढ़, जलभराव, अत्यधिक तापमान, जल-संकट, वायु प्रदूषण, ठोस अपशिष्ट तथा अन्य पर्यावरणीय समस्याएँ नगरीय जीवन और नागरिकों की सुरक्षा को प्रभावित कर रही हैं। ऐसी परिस्थितियों में नगर निगमों की भूमिका केवल नागरिक सुविधाओं के प्रबंधन तक सीमित न रहकर आपदा जोखिम न्यूनीकरण, पर्यावरण संरक्षण तथा सतत नगरीय विकास तक विस्तृत हो गई है। प्रस्तुत शोध का प्रमुख उद्देश्य आपदा प्रबंधन एवं पर्यावरण संरक्षण के क्षेत्र में नगर निगमों की भूमिका का विश्लेषण करना है। अध्ययन में नगर निगमों द्वारा आपदा की पूर्व तैयारी, जोखिम न्यूनीकरण, त्वरित प्रतिक्रिया, राहत एवं पुनर्वास तथा आपदा के पश्चात पुनर्निर्माण से संबंधित कार्यों का अध्ययन किया जाएगा। साथ ही ठोस अपशिष्ट प्रबंधन, जल संरक्षण, स्वच्छता, वायु प्रदूषण नियंत्रण, हरित क्षेत्र विकास तथा पर्यावरणीय जागरूकता जैसे क्षेत्रों में नगर निगमों की कार्यप्रणाली का भी विश्लेषण किया जाएगा। अध्ययन में नगर निगम के निर्वाचित जनप्रतिनिधियों, अधिकारियों, कर्मचारियों तथा नागरिकों के दृष्टिकोण को शामिल किया जाएगा। प्राथमिक एवं द्वितीयक दोनों प्रकार के आँकड़ों का उपयोग करते हुए वर्णनात्मक एवं विश्लेषणात्मक शोध पद्धति अपनाई जाएगी। प्रश्नावली, साक्षात्कार एवं उपलब्ध सरकारी रिपोर्टें तथा संबंधित दस्तावेजों के माध्यम से आवश्यक तथ्यों का संकलन किया जाएगा। अध्ययन से यह समझने का प्रयास किया जाएगा कि नगर निगम आपदा प्रबंधन एवं पर्यावरण संरक्षण के लिए उपलब्ध प्रशासनिक, वित्तीय एवं तकनीकी संसाधनों का किस प्रकार उपयोग करते हैं तथा इन कार्यों में कौन-कौन सी प्रमुख चुनौतियाँ विद्यमान हैं। शोध के आधार पर नगर निगमों की क्षमता, समन्वय, नागरिक सहभागिता तथा प्रशासनिक दक्षता को सुदृढ़ करने हेतु व्यावहारिक सुझाव प्रस्तुत किए जाएंगे। इस प्रकार अध्ययन का उद्देश्य सुरक्षित, स्वच्छ, पर्यावरण-अनुकूल एवं आपदा-लचीले शहरों के निर्माण में नगर निगमों की प्रभावी भूमिका को स्पष्ट करना है।

शिक्षा के क्षेत्र में AI का उपयोग एवं चुनौतियाँ**रविंद्र कुमार**

सहायक आचार्य, इतिहास, लाल बहादुर शास्त्रीराजकीय महाविद्यालय कोटपुतली

वर्तमान समय विज्ञान और प्रौद्योगिकी के तीव्र विकास का युग है। कृत्रिम बुद्धिमत्ता (Artificial Intelligence-AI) आधुनिक तकनीकी विकास की एक महत्वपूर्ण उपलब्धि है। AI ऐसी तकनीक है जिसके माध्यम से कंप्यूटर और मशीनें मानव की तरह सीखने, तर्क करने, समस्या का समाधान करने तथा निर्णय लेने जैसे कार्य कर सकती हैं। आज AI का प्रभाव शिक्षा, चिकित्सा, कृषि, उद्योग और प्रशासन सहित लगभग सभी क्षेत्रों में दिखाई दे रहा है। शिक्षा के क्षेत्र में AI ने शिक्षण-अधिगम की प्रक्रिया को अधिक सरल, व्यक्तिगत और प्रभावी बनाने की संभावनाएँ उत्पन्न की हैं।

आभासी मित्रता और वास्तविक दूरी: युवाओं पर सोशल मीडिया का प्रभाव**राजेन्द्र प्रसाद वर्मा**

शोधार्थी, राजकीय कला कन्या महाविद्यालय, कोटा विश्वविद्यालय, कोटा, राजस्थान।

डॉ. सुबोध कुमार

शोध निर्देशक, राजकीय कला कन्या महाविद्यालय, कोटा विश्वविद्यालय, कोटा, राजस्थान।

वर्तमान डिजिटल युग में सोशल मीडिया युवाओं के जीवन का अभिन्न अंग बन चुका है। फेसबुक, इंस्टाग्राम, व्हाट्सएप, एक्स तथा अन्य डिजिटल मंचों ने संचार के स्वरूप को व्यापक रूप से परिवर्तित किया है। यद्यपि सोशल मीडिया ने वैश्विक स्तर पर लोगों को जोड़ने का कार्य किया है, तथापि इसके परिणामस्वरूप आभासी मित्रता की प्रवृत्ति

में वृद्धि तथा वास्तविक सामाजिक संबंधों में दूरी भी देखने को मिल रही है। प्रस्तुत शोध लेख आभासी मित्रता और वास्तविक दूरी: युवाओं पर सोशल मीडिया का प्रभाव का उद्देश्य यह विश्लेषण करना है कि सोशल मीडिया युवाओं के सामाजिक, मानसिक तथा पारिवारिक जीवन को किस प्रकार प्रभावित कर रहा है। यह अध्ययन विशेष रूप से युवाओं के व्यवहार, संवाद शैली, भावनात्मक संबंधों तथा सामाजिक सहभागिता में आए परिवर्तनों का समाजशास्त्रीय दृष्टिकोण से परीक्षण करता है। शोध में यह स्पष्ट करने का प्रयास किया गया है कि आभासी दुनिया में बढ़ती सक्रियता के कारण युवाओं के प्रत्यक्ष मानवीय संबंध, पारिवारिक संवाद तथा सामाजिक उत्तरदायित्व किस सीमा तक प्रभावित हो रहे हैं। साथ ही, सोशल मीडिया के सकारात्मक पक्षों—जैसे सूचना तक त्वरित पहुँच, अभिव्यक्ति की स्वतंत्रता तथा वैश्विक संपर्क का भी विश्लेषण किया गया है। अध्ययन के निष्कर्ष यह संकेत करते हैं कि सोशल मीडिया युवाओं के व्यक्तित्व निर्माण एवं सामाजिक संबंधों को गहराई से प्रभावित कर रहा है। आवश्यकता इस बात की है कि डिजिटल उपयोग और वास्तविक सामाजिक जीवन के मध्य संतुलन स्थापित किया जाए, जिससे युवाओं का समग्र सामाजिक एवं मानसिक विकास सुनिश्चित हो सके।

नवाचार एवं सामाजिक विकास

डॉ. रुकमणी मीना

आचार्य समाजशास्त्र, राजकीय महाविद्यालय जामडोली

वर्तमान वैश्विक और राष्ट्रीय परिदृश्य में सामाजिक नवाचार शिक्षा, स्वास्थ्य, आजीविका, पर्यावरण संरक्षण और गरीबी उन्मूलन जैसे क्षेत्रों में क्रांतिकारी बदलाव ला रहा है। यह अध्ययन प्राथमिक और द्वितीयक आंकड़ों के विश्लेषण के आधार पर यह स्पष्ट करता है कि तकनीक और सामाजिक सोच का समावेश किस प्रकार समावेशी विकास को बढ़ावा देता है। सामाजिक विकास एक निरंतर चलने वाली प्रक्रिया है जिसका उद्देश्य समाज की सभी वर्गों के जीवन स्तर कल्याण और अवसरों में सुधार करना है। पारंपरिक विकास मॉडल प्रायः केवल आर्थिक वृद्धि पर ध्यान केंद्रित करते हैं, जबकि सामाजिक नवाचार सामाजिक समस्याओं के स्थाई और व्यावहारिक समाधान खोजने पर बल देता है। नवाचार केवल तकनीकी नहीं होता, बल्कि यह सामाजिक संस्थागत और नीतिगत स्तरों पर भी होता है जब कोई नया विचार, उत्पाद या प्रक्रिया समाज की आवश्यकताओं को पूरा करने और सामाजिक संबंधों में सकारात्मक बदलाव लाने का काम करती है तो उसे सामाजिक नवाचार कहा जाता है। नवाचार केवल आर्थिक समृद्धि का साधन ही नहीं है बल्कि यह सामाजिक न्याय समानता और सतत विकास का एक मजबूत आधार है। यदि नवाचार को सामाजिक कल्याण से नहीं जोड़ा गया तो इससे सामाजिक असमानता बढ़ सकती है। सामाजिक क्षेत्र में नवाचारों को बढ़ावा देने के लिए बजटीय आवंटन बढ़ाकर सार्वजनिक, निजी भागीदारी, सरकारी, निजी क्षेत्र और गैर सरकारी संगठनों का समन्वय किया जाना सुनिश्चित करें। साथ ही ग्रामीण और जमीनी स्तर के नवोन्मेषकों को वित्तीय एवं तकनीकी सहायता दी जाए।

पर्यटन, आतिथ्य और सतत विकास— राजस्थान के संदर्भ में

शिम्भू दयाल मीना

असि. प्रोफेसर एम एस जे., राजकीय स्नातकोत्तर महाविद्यालय, भरतपुर

मानव का इतिहास और सांस्कृतिक विरासत वर्तमान पर्यटन का आधार है। पर्यटन शब्द दो शब्दों से मिलकर बना है। यदि (चारों ओर) और अटल (घूमना) इसका शाब्दिक अर्थ है अपने दैनिक जीवन और कार्यक्षेत्र से बाहर निकलकर किसी नवीन स्थान की यात्रा करना। प्राचीनकाल से ही मानव में नवीन जगहों को देखने, जानने और समझने की तीव्र इच्छा रही है। आज के आधुनिक जीवन में पर्यटन केवल मनोरंजन का साधन नहीं, बल्कि जीवन की एक अनिवार्य आवश्यकता बन चुका है। पर्यटन के विभिन्न प्रकारों में ऐतिहासिक और सांस्कृतिक पर्यटन, प्राकृतिक पर्यटन, धार्मिक पर्यटन, साहसिक पर्यटन, चिकित्सा पर्यटन आदि मुख्य हैं, जो हमारे जीवन को सुन्दर, ज्ञानवर्धक और जीवंत बनाता है। पर्यटन मानव जीवन के बौद्धिक, सांस्कृतिक और मानसिक विकास का एक सशक्त साधन है। पर्यटन व्यक्ति को व्यावहारिक ज्ञान देता है, रोजगार सृजन व राजस्व संग्रह का प्रमुख है। अत्यधिक पर्यटन के कारण पर्यावरण प्रदूषण,

प्लास्टिक कचरा, ऐतिहासिक धरोहरों को नुकसान पहुंचाने जैसी गंभीर चुनौतियों भी हैं। इन समस्याओं को समाधान हेतु आज सतत पर्यटन की सख्त आवश्यकता है।

संस्कृत भाषा के वैश्विक प्रसार में कृत्रिम बुद्धिमत्ता की भूमिका सुदर्शन कुमार

सहायक आचार्य संस्कृत, महारानी श्री जया राजकीय स्नातकोत्तर महाविद्यालय, भरतपुर

संस्कृत विश्व की प्राचीन एवं समृद्ध भाषाओं में से एक है। भारतीय ज्ञान-परम्परा, दर्शन, धर्म, साहित्य, व्याकरण, आयुर्वेद, गणित तथा ज्योतिष आदि विविध ज्ञान-विधाओं का विपुल साहित्य संस्कृत भाषा में उपलब्ध है। वर्तमान वैश्वीकरण एवं डिजिटल युग में संस्कृत के अध्ययन-अध्यापन तथा वैश्विक प्रसार के लिए नवीन तकनीकों का उपयोग आवश्यक हो गया है। इस दृष्टि से कृत्रिम बुद्धिमत्ता (तजपिबपंस पदजमससपहमदबमकृ।) संस्कृत भाषा के प्रचार-प्रसार के लिए एक प्रभावशाली तकनीकी माध्यम के रूप में उभर रही है। प्रस्तुत शोध में संस्कृत भाषा के वैश्विक प्रसार में कृत्रिम बुद्धिमत्ता की सम्भावनाओं का विश्लेषण किया गया है। १८ आधारित छंजनतंस स्दहनंहम च्त्वबमेपदह (छस्च), मशीन अनुवाद, वाक्-पहचान (चममबी त्मबवहदपजपवद), पाठ-विश्लेषण, स्वचालित व्याकरण-जाँच तथा संवादात्मक १८ के माध्यम से संस्कृत को विभिन्न भाषाभाषी समुदायों तक अधिक सुगमता से पहुँचाया जा सकता है। संस्कृत ग्रन्थों के डिजिटल पाठ तैयार करने, उनके अनुवाद एवं अर्थ-बोध को सरल बनाने तथा संस्कृत उच्चारण के अभ्यास में भी १८ उपयोगी सिद्ध हो सकती है। विशेष रूप से ळमदमतंजपअम १८ के माध्यम से संस्कृत सीखने वाले विद्यार्थियों को व्यक्तिगत स्तर पर अभ्यास, संवाद, व्याकरण-संशोधन तथा पाठ-व्याख्या जैसी सुविधाएँ प्राप्त हो सकती हैं। इससे संस्कृत के प्रति नवीन पीढ़ी की रुचि बढ़ाने तथा गैर-संस्कृतभाषी देशों में इसके अध्ययन को सुगम बनाने की सम्भावना है। तथापि १८ के प्रयोग में संस्कृत की जटिल रूप-रचना, सन्धि-समास, बहुअर्थकता, सांस्कृतिक सन्दर्भ तथा शास्त्रीय ग्रन्थों के सूक्ष्म अर्थों की यथार्थ व्याख्या जैसी चुनौतियाँ भी विद्यमान हैं। अतः १८ को मानव विशेषज्ञता के पूरक के रूप में उपयोग करना अधिक उपयुक्त होगा। निष्कर्षतः कृत्रिम बुद्धिमत्ता संस्कृत भाषा के संरक्षण, आधुनिक तकनीकी रूपान्तरण और वैश्विक प्रसार के लिए नवीन अवसर प्रदान करती है तथा संस्कृत को डिजिटल ज्ञान-परिसर में अधिक व्यापक रूप से स्थापित करने में सहायक हो सकती है।

ऋतुराज की कविता में प्रकृति-चित्रण

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प्रस्तुत शोधपरक आलेख में समकालीन हिन्दी कविता के परिप्रेक्ष्य में कवि ऋतुराज की कविताओं में प्रकृति-चित्रण की विविध छवियों और उसकी अंतर्वस्तु का विवेचन किया गया है। समकालीन हिन्दी कविता अपने समय के सामाजिक, आर्थिक, राजनीतिक और सांस्कृतिक अंतर्विरोधों से गहरे रूप में संपृक्त रही है। भूमंडलीकरण, नवउदारवाद, बाजारवाद और तकनीकी परिवर्तन ने जहाँ मनुष्य के जीवन-जगत को व्यापक रूप से प्रभावित किया है, वहीं मनुष्य और प्रकृति के पारंपरिक संबंधों में भी उल्लेखनीय परिवर्तन उपस्थित किए हैं। ऐसे संक्रमणशील समय में ऋतुराज की कविता लोक जीवन, मनुष्य और प्रकृति के बीच के आत्मीय एवं जटिल संबंधों को अपनी विशिष्ट काव्य-दृष्टि के साथ अभिव्यक्त करती है। ऋतुराज के काव्य में प्रकृति केवल रमणीयता, सौंदर्य अथवा मनोरंजन का उपादान नहीं है, बल्कि वह मनुष्य के जीवन-संघर्ष, स्मृति, संवेदना, सामाजिक यथार्थ और सांस्कृतिक अनुभव की सक्रिय सहभागी है। उनकी कविताओं में पेड़-पौधे, फूल, पृथ्वी, नदी, घर-आँगन और आसपास का प्राकृतिक परिवेश अपने स्वतंत्र अस्तित्व के साथ-साथ मनुष्य की अनुभूतियों और जीवन-स्थितियों के अर्थपूर्ण बिंबों में रूपांतरित होते हैं। इसीलिए उनकी प्रकृति-दृष्टि पारंपरिक सौंदर्यबोध की सीमाओं में आबद्ध न रहकर समकालीन जीवन की विडंबनाओं, आकांक्षाओं और संघर्षों से संवाद करती है। ऋतुराज की कविता में प्रकृति और स्त्री के अंतर संबंध भी विशेष रूप से उल्लेखनीय हैं। उनकी काव्य-दृष्टि स्त्री को महज पीड़ा, वंचना और शोषण की निष्क्रिय प्रतिमा के रूप में नहीं देखती, बल्कि उसकी सृजनात्मकता, स्वायत्तता,

जिजीविषा और जीवन-ऊर्जा को प्रकृति की विविध छवियों के साथ जोड़ती है। इस अर्थ में प्रकृति उनके यहाँ केवल जीवन और सौंदर्य की प्रतीक नहीं, बल्कि प्रतिरोध, मुक्ति और मानवीय गरिमा की चेतना का भी रूप ग्रहण करती है। लोकधर्मी भाषा, सहज लय, चित्रात्मकता और सघन बिंब-विधान उनकी प्रकृति-संबंधी कविताओं को विशेष प्रभावशीलता प्रदान करते हैं। ऋतुराज की प्रकृति-दृष्टि का महत्त्व इस बात में भी निहित है कि वे प्रकृति को मनुष्य से अलग और दूर स्थित किसी निष्क्रिय सत्ता के रूप में नहीं देखते। उनके यहाँ प्रकृति मनुष्य के सामाजिक, सांस्कृतिक और भावनात्मक संसार में अंतर्निहित है। वह जीवन की स्मृतियों को सँजोती है, लोक-संस्कृति को अर्थ देती है और बदलते समय में मनुष्य की संवेदना को बचाए रखने का माध्यम बनती है। इस प्रकार उनकी कविता में प्रकृति लोक और आधुनिकता, सौंदर्य और यथार्थ, संवेदना और सामाजिक चेतना के बीच एक जीवंत सेतु का निर्माण करती है। यही विशिष्टता ऋतुराज के प्रकृति-चित्रण को समकालीन हिन्दी कविता में एक अलग पहचान और महत्त्व प्रदान करती है।

झाबुआ जिले के आदिवासी उद्यमियों में ऋण प्राप्ति की स्थिति, वित्तीय बाधाओं एवं व्यवसाय विस्तार की संभावनाओं का विश्लेषणात्मक अध्ययन

डॉ. सुनिता गणावा

पूर्व शोधार्थी, वाणिज्य अध्ययनशाला, सम्राट् विक्रमादित्य विश्वविद्यालय, उज्जैन मध्य प्रदेश

आदिवासी बहुल क्षेत्रों में उद्यमिता स्थानीय स्तर पर रोजगार सृजन, आय वृद्धि, आर्थिक आत्मनिर्भरता तथा क्षेत्रीय विकास का महत्वपूर्ण माध्यम बन सकती है। झाबुआ जिला आदिवासी आबादी की दृष्टि से महत्वपूर्ण क्षेत्र है, जहाँ कृषि, पशुपालन, लघु व्यापार, हस्तशिल्प, खाद्य प्रसंस्करण, सेवा एवं अन्य सूक्ष्म व्यवसायों से अनेक उद्यमी जुड़े हुए हैं। इन उद्यमों के विकास एवं विस्तार के लिए पर्याप्त एवं समय पर वित्तीय संसाधनों की उपलब्धता महत्वपूर्ण है। किंतु औपचारिक ऋण संस्थानों तक सीमित पहुँच, वित्तीय साक्षरता का अभाव, जमानत एवं दस्तावेज संबंधी कठिनाइयाँ, उच्च ब्याज दर, ऋण प्रक्रिया की जटिलता तथा ऋण संस्थानों के प्रति जागरूकता की कमी जैसी वित्तीय बाधाएँ आदिवासी उद्यमियों के व्यवसाय विस्तार को प्रभावित कर सकती हैं। प्रस्तुत अध्ययन झाबुआ जिले के आदिवासी उद्यमियों में ऋण प्राप्ति की स्थिति का विश्लेषण करना तथा ऋण प्राप्त करने में आने वाली प्रमुख वित्तीय बाधाओं की पहचान करना है। साथ ही, यह अध्ययन इस बात का परीक्षण करेगा कि पर्याप्त वित्तीय संसाधनों की उपलब्धता व्यवसाय के विस्तार, निवेश, रोजगार सृजन तथा आय में वृद्धि की संभावनाओं को किस प्रकार प्रभावित करती है। अध्ययन में ऋण के स्रोत, ऋण की आवश्यकता, प्राप्त ऋण की मात्रा, ऋण प्राप्त करने में लगने वाला समय, ब्याज दर, जमानत की आवश्यकता, वित्तीय साक्षरता तथा ऋण के उपयोग जैसे प्रमुख पहलुओं को सम्मिलित किया है। आदिवासी उद्यमियों की वित्तीय पहुँच को समझने तथा उनके व्यवसाय विस्तार में आने वाली बाधाओं को चिन्हित करने में सहायक होंगे।

दिव्यांगजनों के अधिकारों का संरक्षण एवं राज्य विशेष योग्यजन आयोग की भूमिका: एक विश्लेषणात्मक अध्ययन

मुकेश कुमार गुप्ता

सहायक आचार्य- राजनीति विज्ञान, श्री सन्त सुन्दरदास राजकीय स्नातकोत्तर महिला महाविद्यालय दौसा

प्रजातांत्रिक शासन प्रणाली एवं कल्याणकारी राज्य की संकल्पना में समाज के प्रत्येक नागरिक को समानता, गरिमा और आत्मसम्मान के साथ जीने का अधिकार प्राप्त है। भारतीय संविधान की प्रस्तावना, मौलिक अधिकार एवं नीति निदेशक तत्व सामाजिक न्याय और समावेशिता पर विशेष बल देते हैं। 'दिव्यांगजन अधिकार अधिनियम, 2016' के वैधानिक ढाँचे के अंतर्गत दिव्यांगजनों के अधिकारों की सुरक्षा, उनके विरुद्ध होने वाले भेदभाव के निवारण तथा कल्याणकारी योजनाओं के प्रभावी क्रियान्वयन हेतु राज्य स्तर पर विशेष योग्यजन आयोग की स्थापना एक अत्यंत महत्वपूर्ण सांस्थानिक व्यवस्था है। प्रस्तुत शोध पत्र का प्रमुख उद्देश्य राज्य विशेष योग्यजन आयोग की कार्यप्रणाली, विधिक शक्तियों तथा दिव्यांगजनों के अधिकारों के संरक्षण में इसकी वास्तविक भूमिका का गहन विश्लेषणात्मक अध्ययन प्रस्तुत करना है। प्रस्तुत शोध विवरणात्मक एवं विश्लेषणात्मक शोध प्रविधि पर आधारित है, जिसमें प्राथमिक एवं द्वितीयक स्रोतों/कृत्रिम संबंधित अधिनियम, सरकारी अधिसूचनाओं, आयोग के वार्षिक प्रतिवेदनों, अर्ध-न्यायिक आदेशों तथा विभिन्न



शोध प्रकाशनोंकृता तार्किक विश्लेषण किया गया है। अध्ययन से यह परिलक्षित होता है कि राज्य विशेष योग्यजन आयोग ने एक सक्रिय निगरानी तंत्र के रूप में कार्य करते हुए शिक्षा में समावेशन, सार्वजनिक भवनों एवं परिवहन में सुगम्यता रोजगार में आरक्षण, सामाजिक सुरक्षा और उत्पीड़न संबंधी शिकायतों के निस्तारण में उल्लेखनीय भूमिका निभाई है। आयोग द्वारा दिए गए त्वरित एवं संवेदनशील निर्णयों ने प्रशासनिक तंत्र की जवाबदेही तय करने तथा नीतिगत स्तर पर सुधारात्मक बदलाव लाने में सहायता की है। तथापि, निर्णयों के बाध्यकारी क्रियान्वयन, पर्याप्त मानव संसाधन एवं वित्तीय स्वायत्तता से जुड़ी चुनौतियाँ आयोग के पूर्ण प्रभाव को सीमित करती हैं। प्रस्तुत अध्ययन निष्कर्ष रूप में यह स्पष्ट करता है कि राज्य विशेष योग्यजन आयोग के प्रशासनिक व विधिक अधिकारों को और अधिक सुदृढ़ बनाकर ही सतत विकास लक्ष्यों के अनुरूप एक समतामूलक, बाधा-मुक्त एवं समावेशी समाज की स्थापना को सुनिश्चित किया जा सकता है।



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