ISBN: 978-93-95847-65-0

Progressive Research in Humanities, Social Sciences, Commerce and Management Volume I

Editors:
Sugandha Agarwal
Pranati Misra
Ankita Jaiswal
Radhika Sharma
Osceen Mishra

BHUMI PUBLISHING, INDIA
FIRST EDITION: AUGUST 2024

Progressive Research in Humanities, Social Sciences, Commerce and Management

Volume I

(ISBN: 978-93-95847-65-0)

Editors

Sugandha Agarwal

Pranati Misra

Ankita Jaiswal

Radhika Sharma

Osceen Mishra

National Post Graduate College, Lucknow, U. P.

Bhumi Publishing

August, 2024

Title: Progressive Research in Humanities, Social Sciences,

Commerce and Management Volume I

Editors: Sugandha Agarwal, Pranati Misra, Ankita Jaiswal, Radhika Sharma, Osceen Mishra

First Edition: August, 2024

ISBN: 978-93-95847-65-0

Published by:

Bhumi Publishing

BHUMI PUBLISHING

Nigave Khalasa, Tal – Karveer, Dist – Kolhapur, Maharashtra, INDIA 416 207

E-mail: bhumipublishing@gmail.com

PREFACE

Welcome to the inaugural volume of Progressive Research in Humanities, Social Sciences, Commerce, and Management. This collection of scholarly work marks an important step in our ongoing commitment to advancing knowledge across these diverse fields.

In this volume, we bring together a range of research contributions that reflect the dynamic and evolving nature of the humanities, social sciences, commerce, and management. Our aim is to provide a platform for innovative ideas and critical analyses that contribute to a deeper understanding of the complex issues facing our world today.

The research presented in this volume spans various topics, from the exploration of cultural and social phenomena to the analysis of economic and management practices. Each paper offers unique insights and perspectives, driven by rigorous methodology and a passion for discovery.

We are grateful to the authors who have generously shared their expertise and to the reviewers whose feedback has ensured the quality and relevance of the included studies. Their dedication is instrumental in fostering an environment of intellectual growth and scholarly excellence.

As we embark on this journey with Volume I, we hope that the research findings and discussions will not only inspire further inquiry but also contribute to practical solutions and advancements in our respective fields. It is our belief that the collective knowledge shared in this volume will serve as a valuable resource for academics, practitioners, and policymakers alike.

Thank you for your interest in Progressive Research in Humanities, Social Sciences, Commerce, and Management. We look forward to your engagement with the research presented and anticipate continued contributions in future volumes.

Editors

TABLE OF CONTENT

PEDAGOGICAL STRATEGIES IN ONLINE, DISTANCE, AND REGULAR EDUCATION: BEST PRACTICES AND OUTCOMES

S. Thowseaf

Centre for Distance and Online Education,

B.S. Abdur Rahman Crescent Institute of Science and technology, Vandalur – 600 048

Corresponding author E-mail: thowseaf@crescent.education

Abstract:

This study explores pedagogical practices and learning outcomes across online, distance, and traditional in-person education modalities among students in Tamil Nadu, India. A descriptive research design was employed to analyze the strengths, challenges, and effectiveness of each modality, aiming to provide insights for optimizing educational strategies. A structured questionnaire was administered to 412 respondents, primarily aged 18-24 years, with diverse educational backgrounds in fields such as Business, Social Sciences, and Humanities. Findings highlight flexibility as a key strength in online and hybrid formats, while traditional in-person education excels in interpersonal interactions. Technical issues and time management emerged as significant challenges, particularly in online and distance learning settings. Overall, satisfaction was moderately influenced by gender and employment status, underscoring the need for tailored educational support. The study recommends educational institutions adapt strategies to enhance interaction, support, and resource accessibility across diverse learning environments.

Keywords: Pedagogical Practices, Educational Modalities, Online Education, Distance Learning, Traditional In-Person Education, Student Satisfaction, Learning Outcomes, Academic Success, Educational Strategies, Tamil Nadu

Introduction:

Education, in its various forms, is the cornerstone of societal development and personal growth. In recent decades, the landscape of education has undergone a seismic shift due to technological advancements, globalization, and the evolving needs of learners. This has led to the emergence of distinct educational modalities: online education, distance education, and traditional in-person education. Each modality has unique pedagogical strategies, benefits, and challenges. Understanding these strategies and their outcomes is crucial for educators, policymakers, and students to optimize learning experiences and outcomes. This introduction explores the best practices and outcomes of pedagogical strategies in online, distance, and regular education. The traditional classroom setting, characterized by face-to-face interactions between teachers and students, has long been the predominant mode of education. However, the advent of the internet and digital technologies has introduced online education, which allows

learners to access educational resources and instruction from virtually anywhere (Allen & Seaman, 2017). Similarly, distance education, which predates the digital age, has evolved from correspondence courses to include modern tools such as video conferencing and online course management systems (Moore & Kearsley, 2011).

Online education, often synonymous with e-learning, leverages digital platforms to deliver instructional content. This modality offers unparalleled flexibility, enabling learners to access courses at their convenience, which is particularly beneficial for adult learners and working professionals (Garrison, 2011). The effectiveness of online education largely depends on the pedagogical strategies employed. According to Garrison (2011), a Community of Inquiry (CoI) framework is pivotal for successful online learning. This framework emphasizes social, cognitive, and teaching presence to create a meaningful learning experience. Best practices in online education include the use of multimedia resources, interactive discussions, and continuous feedback (Means *et al.,* 2010). For instance, multimedia resources such as videos, podcasts, and interactive simulations can enhance understanding and retention of complex concepts (Mayer, 2009). Additionally, fostering a collaborative learning environment through discussion forums and group projects can enhance critical thinking and knowledge construction (Rovai, 2002).

Distance education, while similar to online education, often encompasses a broader range of delivery methods, including print-based materials, television broadcasts, and teleconferencing (Moore & Kearsley, 2011). The primary advantage of distance education is its ability to reach learners in remote or underserved areas, providing access to education that might otherwise be unavailable (Perraton, 2000). Effective pedagogical strategies in distance education include clear and concise instructional design, regular communication, and supportive learning environments. According to Simonson et al. (2015), instructional design should be learner-centered, focusing on clear objectives and structured content to guide learners through the course. Regular communication between instructors and students is essential to provide guidance, feedback, and support, which can mitigate the isolation often experienced in distance learning (Bernard *et al.,* 2004).

Traditional in-person education remains a foundational modality, offering direct interaction and immediate feedback between educators and students. This mode benefits from the rich, spontaneous exchanges that occur in a physical classroom, which can foster a deeper understanding and sense of community (Chickering & Gamson, 1987). Best practices in traditional education include active learning, formative assessment, and differentiated instruction. Active learning strategies, such as group work, debates, and hands-on activities, engage students actively in the learning process, promoting higher-order thinking skills (Prince, 2004). Formative assessments, including quizzes, peer reviews, and in-class discussions, provide ongoing feedback to students and instructors, facilitating timely interventions and support (Black

& Wiliam, 1998). Differentiated instruction, which involves tailoring teaching methods to accommodate diverse learning styles and needs, ensures that all students can achieve their potential (Tomlinson, 2001).

The outcomes of these educational modalities vary, influenced by the effectiveness of the pedagogical strategies employed. Research indicates that, when best practices are implemented, online and distance education can achieve outcomes comparable to traditional in-person education (Means *et al.,* 2010). However, the success of these modalities depends on several factors, including the learners' self-motivation, access to technology, and the quality of instructional design (Bernard *et al.,* 2004).

Review of Literatures

Garrison's, (2011) Community of Inquiry (CoI) framework is foundational in understanding the pedagogical dynamics of online education. It emphasizes social, cognitive, and teaching presence, highlighting the importance of interaction and engagement in online learning environments. This framework provides a theoretical basis for analyzing best practices in online education and their impact on learning outcomes.

Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2010) made a meta-analysis reviews on the effectiveness of online learning compared to traditional in-person instruction. The study finds that, on average, students in online learning conditions performed modestly better than those receiving face-to-face instruction, providing empirical support for the potential of online education when best practices are implemented.

Moore, M. G., & Kearsley, G. (2011) offered a comprehensive overview of distance education, covering historical development, instructional design, and technological integration. Their work underscores the importance of clear communication and supportive learning environments, aligning with the identified research gap in understanding how different strategies affect learner outcomes.

Bernard, R. M., *et al.* & Huang, B. (2004) made meta-analysis that, examines the comparative effectiveness of distance education versus traditional classroom instruction. The findings suggest that distance education can be as effective as traditional education, particularly when robust pedagogical strategies are employed. This study highlights the need for more integrated research on pedagogical practices across different modalities.

Prince, M. (2004) review of active learning strategies demonstrates their effectiveness in enhancing student engagement and higher-order thinking skills in traditional classroom settings. This work supports the need for active learning practices across all educational modalities and provides a basis for comparing these practices in online and distance education.

Rovai, A. P. (2002) explored strategies to foster a sense of community in distance education. His findings indicate that creating a supportive and interactive environment is crucial

for student satisfaction and success. This aligns with the statement of problems, emphasizing the importance of community-building in all educational settings.

Tomlinson, C. A. (2001) work on differentiated instruction highlighted the need to tailor teaching methods to diverse learner needs. This is particularly relevant to addressing the research gap related to inclusivity and accessibility in various educational modalities. Differentiated instruction can be a valuable strategy in both online and distance education.

Mayer, R. E. (2009) principles of multimedia learning provide a framework for designing effective online educational materials. His research supports the use of multimedia resources to enhance understanding and retention, aligning with the objective of identifying best practices in online education.

Simonson, M., Smaldino, S., Albright, M., & Zvacek, S. (2015) made a comprehensive text that covers the foundational theories and practices of distance education. Simonson et al. emphasize the importance of instructional design and learner support, which are critical for achieving positive outcomes in distance education. This work addresses the research gap related to effective pedagogical strategies.

Black, P., & Wiliam, D. (1998) attempted research on formative assessment underscores and its importance in providing ongoing feedback and support to students. Their findings are relevant for both traditional and online education, highlighting the need for continuous assessment to enhance learning outcomes.

Research Gap

While substantial research exists on the individual effectiveness of online, distance, and traditional in-person education, there is a notable gap in comprehensive studies that simultaneously compare these modalities through a detailed analysis of their pedagogical strategies and outcomes. Most existing literature focuses on isolated aspects of each modality, such as technological tools in online education or communication methods in distance education, without integrating these findings into a cohesive framework. Additionally, there is a lack of empirical data examining how different pedagogical approaches within these modalities impact diverse student populations, including those with varying learning preferences, socioeconomic backgrounds, and geographical locations. This gap underscores the need for a holistic study that not only contrasts these educational forms but also provides actionable insights to optimize pedagogical practices across all modalities.

Statement of Problem

Current research often treats online, distance, and traditional in-person education as separate entities without sufficiently exploring the interplay and potential integration of their pedagogical strategies. This segmentation leads to a fragmented understanding of how best practices can be adapted and applied across different learning environments.

There is a paucity of studies that provide a thorough analysis of learning outcomes associated with each educational modality. Specifically, there is insufficient data on how these outcomes vary based on the implementation of specific pedagogical strategies, making it difficult to ascertain which approaches yield the best results in different contexts.

Existing research does not adequately address the diverse needs of learners within each educational modality. This includes considerations of different learning styles, accessibility issues, and the socio-economic factors that influence student engagement and success. Without this understanding, educational strategies may fail to be inclusive and equitable.

There is a significant lack of empirical evidence comparing the long-term effectiveness of pedagogical strategies across online, distance, and traditional education. This gap hampers the development of evidence-based recommendations that can guide educators and policymakers in enhancing educational quality.

The rapid evolution of technology presents both opportunities and challenges for education. However, current research often lags in examining how new technological tools and platforms can be effectively integrated into pedagogical practices across different modalities, particularly in ways that enhance learning outcomes and accessibility.

Objectives of the Study

1. To identify and analyze the best pedagogical practices in online, distance, and traditional in-person education, highlighting their unique benefits and challenges.
2. To evaluate the learning outcomes associated with each educational modality, providing recommendations for optimizing educational strategies to enhance student engagement and achievement.

Methodology

- ***Research Design:*** This study adopts a descriptive research design to identify, analyze, and compare the pedagogical practices and learning outcomes across three educational modalities: online, distance, and traditional in-person education. Descriptive research allows for the systematic gathering of data to describe characteristics and phenomena of interest, providing insights into current practices and outcomes.
- ***Sample Respondents:*** The target population for this study includes students currently enrolled in educational programs across various institutions offering online, distance, or traditional in-person education in Tamil Nadu. Respondents will be drawn from diverse educational backgrounds and geographical locations to ensure representation across different demographics.
- ***Sampling Technique:*** The study will utilize stratified random sampling to ensure proportional representation of students from each educational modality (online, distance, traditional in-person). Stratification will be based on educational institution type (e.g.,

universities, colleges, vocational schools) and geographical region (e.g., urban, suburban, rural). This technique helps in reducing bias and ensuring that each subgroup is adequately represented.

- ***Sample Size:*** The sample size for this study is 412 respondents. This sample size is determined based on the principle of ensuring statistical significance and adequate power to detect meaningful differences among the educational modalities in terms of pedagogical practices and learning outcomes.
- ***Data Collection Instrument:*** The primary data collection instrument will be a structured questionnaire developed specifically for this study. The questionnaire will consist of closed-ended questions to gather quantitative data on:
    - Demographic information (age, gender, educational background, employment status, primary mode of education).
    - Satisfaction with current educational modality.
    - Perceived strengths and challenges of each educational modality.
    - Effectiveness of teaching methods and learning outcomes.
    - Factors influencing academic success.
    - Recommendations for improving educational strategies.

  The questionnaire will be pre-tested with a small sample of respondents to ensure clarity, relevance, and reliability. Adjustments will be made based on feedback from the pre-test to enhance the validity of the instrument.
- ***Data Collection Procedure:*** Data collection will be conducted using an online survey platform to reach a geographically diverse pool of respondents efficiently. Participation will be voluntary, and respondents will be assured of confidentiality and anonymity of their responses. The survey link will be distributed to potential participants through educational institutions, social media platforms, and professional networks to maximize response rates.

Analysis and Interpretation

The demographic profile of the respondents is presented in Table No. 1, showcasing the distribution of participants by age, gender, highest level of education, current employment status, primary mode of education, and field of study. This analysis provides a comprehensive overview of the sample's characteristics.

Table 1: Percentage Analysis – Demographic Profile

		Frequency	Percent
Age	18 - 24	223	54.1
	25 - 34	127	30.8
	35 - 44	25	6.1
	Above 45	37	9.0
	Total	412	100.0
Gender	Male	201	48.8
	Female	211	51.2
	Total	412	100.0
Highest Level of Education	Bachelor's Degree	325	78.9
	Master's Degree	66	16.0
	Doctoral Degree	21	5.1
	Total	412	100.0
Current Employment Status	Full-time student	101	24.5
	Part-time student	23	5.6
	Employed full-time	236	57.3
	Employed part-time	45	10.9
	Unemployed	2	.5
	Retired	5	1.2
	Total	412	100.0
Primary Mode of Education	Online	68	16.5
	Distance learning	132	32.0
	Traditional in-person	109	26.5
	Hybrid (combination of online and in-person)	103	25.0
	Total	412	100.0
Field of Study	STEM (Science, Technology, Engineering, Mathematics)	7	1.7
	Humanities	46	11.2
	Social Sciences	53	12.9
	Business	262	63.6
	Arts	44	10.7
	Total	412	100.0

Source: (Primary data)

The age distribution indicates that the majority of respondents (54.1%) are between 18 and 24 years old, followed by 30.8% in the 25-34 age group. A smaller proportion falls within the 35-44 (6.1%) and above 45 (9.0%) age brackets. Gender representation is fairly balanced with females comprising 51.2% and males 48.8% of the sample. Most respondents hold a Bachelor's degree (78.9%), with 16.0% having a Master's degree and 5.1% a Doctoral degree.

Table 2: Chi Square Analysis – Strength in Different Mode of Education

Crosstab						
		Primary Mode of Education				**Total**
		Online	**Distance learning**	**Traditional in-person**	**Hybrid (combination of online and in-person)**	
What are the key strengths of your current mode of education?	Flexibility	33	25	12	24	94
	Accessibility	30	19	11	18	78
	Interaction with instructors	0	33	38	19	90
	Interaction with peers	1	31	40	19	91
	Quality of resources	4	24	8	23	59
Total		68	132	109	103	412

Chi-Square Tests			
	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	117.970[a]	12	.000
Likelihood Ratio	131.892	12	.000
Linear-by-Linear Association	23.690	1	.000
N of Valid Cases	412		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.74.

Source: (Primary data)

In terms of employment status, 57.3% of participants are employed full-time, while 24.5% are full-time students. Part-time students and part-time employed individuals make up 5.6% and 10.9% respectively, with a small fraction being unemployed (0.5%) or retired (1.2%).

The primary modes of education are varied, with 32.0% engaged in distance learning, 26.5% in traditional in-person education, 25.0% in hybrid formats, and 16.5% in online education. The dominant field of study is Business (63.6%), followed by Social Sciences (12.9%), Humanities (11.2%), Arts (10.7%), and STEM (1.7%).

Table No. 2 presents the chi-square analysis of the perceived strengths across different modes of education, including online, distance learning, traditional in-person, and hybrid formats. This analysis aims to identify statistically significant differences in the key strengths associated with each educational modality.

The chi-square analysis reveals significant association in perceived strengths across various modes of education ($\chi^2 = 117.970$, df = 12, $p < .001$). Flexibility is most frequently cited as a strength in online education (33) and hybrid formats (24), while traditional in-person education has the lowest count (12). Accessibility is similarly valued in online (30) and hybrid education (18) but is less emphasized in traditional in-person (11) and distance learning (19).

Notably, interaction with instructors and peers is predominantly highlighted as a strength in traditional in-person (38 and 40, respectively) and distance learning (33 and 31, respectively), suggesting that these modes better facilitate interpersonal engagement. The quality of resources is more frequently recognized as a strength in hybrid (23) and distance learning (24) settings compared to traditional in-person (8) and online education (4).

Table No. 3 presents the chi-square analysis of the main challenges faced by students across different educational modalities, including online, distance learning, traditional in-person, and hybrid formats. This analysis aims to identify statistically significant differences in the challenges associated with each mode of education.

The chi-square analysis indicates significant association in the challenges faced by students across various educational modalities ($\chi^2 = 145.216$, df = 12, $p < .001$). Technical issues are predominantly reported by online (27) and hybrid (21) education students, whereas traditional in-person (10) and distance learning (10) students face these challenges less frequently. A lack of interaction is the most significant challenge for online education (36), highlighting the need for improved communication tools and strategies.

Time management is a substantial challenge for students in distance learning (45), suggesting that the asynchronous nature of this modality requires better time management skills. Motivation is another major challenge reported by traditional in-person (34) and hybrid (23) students, indicating a need for strategies to enhance student engagement and motivation in these settings. Quality of instruction emerges as a significant concern for distance learning (38) and traditional in-person (30) students, underscoring the importance of maintaining high instructional standards across these modalities.

Table 3: Chi Square Analysis – Challenges in Different Mode of Education

Crosstab						
		Primary Mode of Education				**Total**
		Online	**Distance learning**	**Traditional in-person**	**Hybrid (combination of online and in-person)**	
What are the main challenges you face with your current mode of education?	Technical issues	27	10	10	21	68
	Lack of interaction	36	12	8	20	76
	Time management	2	45	27	18	92
	Motivation	1	27	34	23	85
	Quality of instruction	2	38	30	21	91
Total		68	132	109	103	412
Chi-Square Tests						
	Value	**df**	**Asymptotic Significance (2-sided)**			
Pearson Chi-Square	145.216[a]	12	.000			
Likelihood Ratio	149.854	12	.000			
Linear-by-Linear Association	18.158	1	.000			
N of Valid Cases	412					
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.22.						

Source: (Primary data)

Below Table No. 4 presents the chi-square analysis of the teaching methods deemed most effective by students across different educational modalities, including online, distance learning, traditional in-person, and hybrid formats. This analysis aims to identify any statistically significant differences in the perceived effectiveness of various teaching methods across these educational settings.

The chi-square analysis reveals no significant assocaition in the perceived effectiveness of teaching methods across different educational modalities ($\chi^2 = 14.260$, df = 15, p = .506). Interactive discussions and group projects are widely considered effective across all modalities,

with 97 respondents each favoring these methods. This suggests that collaborative and engaging teaching approaches are universally valued by students, regardless of the educational mode.

Hands-on activities are particularly favored in distance learning (32) and hybrid education (28), indicating that practical engagement remains crucial in these formats. Multimedia resources are also well-regarded, especially in distance learning (34), highlighting the importance of diverse and dynamic content delivery methods.

Table 4: Chi Square Analysis –Effective Teaching Method in Different Mode of Education

Crosstab						
		Primary Mode of Education				**Total**
		Online	**Distance learning**	**Traditional in-person**	**Hybrid (combination of online and in-person)**	
Which teaching methods do you find most effective in your current mode of education?	Lectures	1	3	1	2	7
	Interactive discussions	14	26	26	31	97
	Group projects	19	30	30	18	97
	Hands-on activities	18	32	25	28	103
	Multimedia resources	16	34	22	23	95
	Self-paced learning	0	7	5	1	13
Total		68	132	109	103	412
Chi-Square Tests						
	Value	**df**	**Asymptotic Significance (2-sided)**			
Pearson Chi-Square	14.260[a]	15	.506			
Likelihood Ratio	16.624	15	.342			
Linear-by-Linear Association	1.079	1	.299			
N of Valid Cases	412					

Source: (Primary data)

Lectures, however, are perceived as less effective across all modalities, with the lowest counts in each category, suggesting a shift away from traditional didactic teaching towards more

interactive and participatory methods. Self-paced learning is primarily valued in distance learning (7), aligning with the flexible nature of this modality.

The table presents the results of the tests of between-subjects effects, examining the impact of various demographic and educational factors on overall satisfaction with the current mode of education. The dependent variable is the overall satisfaction rating, with independent variables including age, gender, highest level of education, current employment status, primary mode of education, and field of study.

Table 5: Univariate Analysis – Satisfaction from Different Modes of Education

Tests of Between-Subjects Effects					
Dependent Variable:	How would you rate your overall satisfaction with your current mode of education?				
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Age	.358	3	.119	.114	.952
Gender	4.040	1	4.040	3.862	.050
Highest Level of Education	1.431	2	.715	.684	.505
Current Employment Status	11.538	5	2.308	2.206	.053
Primary Mode of Education	1.558	3	.519	.496	.685
Field of Study	1.746	4	.436	.417	.796

Descriptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
How would you rate your overall satisfaction with your current mode of education?	412	1.00	5.00	3.9369	1.02802
Valid N (listwise)	412				

Source: (Primary data)

The analysis reveals that gender ($F = 3.862$, $p = .050$) and current employment status ($F = 2.206$, $p = .053$) are marginally significant factors affecting overall satisfaction with the current mode of education. Specifically, gender shows a near-significant influence on satisfaction, suggesting that male and female students might perceive their educational experiences differently. Current employment status also approaches significance, indicating that students' job responsibilities and time commitments could impact their satisfaction levels.

Other variables, including age, highest level of education, primary mode of education, and field of study, do not show significant effects on overall satisfaction. This suggests that these factors might not play a substantial role in how students perceive their educational experience across different modes of education.

The descriptive statistics indicate that the mean satisfaction rating is 3.9369 with a standard deviation of 1.02802, on a scale from 1 to 5. This suggests that, on average, students are fairly satisfied with their current mode of education, though there is some variability in their responses. Overall, the findings highlight the need for educational institutions to consider gender and employment status when designing and implementing educational programs to enhance student satisfaction.

Table No. 6 presents the chi-square analysis of the frequency of interactions with instructors and collaboration with peers across different educational modalities, including online, distance learning, traditional in-person, and hybrid formats. This analysis aims to identify patterns and significant differences in interaction and collaboration behaviors among students in these various modes of education.

Table 6: Cross Tabulation –Interaction with Instructor and Peer Group in Different Mode of Education

Crosstab						
		Primary Mode of Education				**Total**
		Online	**Distance learning**	**Traditional in-person**	**Hybrid (combination of online and in-person)**	
How often do you interact with your instructors?	Daily	0	5	97	2	104
	Weekly	53	101	8	74	236
	Monthly	7	5	1	6	19
	Rarely	5	13	2	11	31
	Never	3	8	1	10	22
Total		68	132	109	103	412
How often do you collaborate with your peers?	Daily	1	3	97	2	103
	Weekly	51	99	7	78	235
	Monthly	2	13	0	5	20
	Rarely	7	8	4	10	29
	Never	7	9	1	8	25
Total		68	132	109	103	412

Source: (Primary data)

The frequency of interaction with instructors shows distinct patterns across different educational modalities. Traditional in-person education stands out with the highest daily interaction rate (97), indicating that face-to-face settings facilitate more frequent instructor-student interactions. Conversely, weekly interactions are most common in online (53) and distance learning (101) modalities, reflecting the structured yet less frequent nature of these environments. Monthly and rare interactions are relatively infrequent across all modalities, while a small number of students in online (3) and hybrid (10) settings report never interacting with their instructors.

Collaboration with peers follows a similar trend, with traditional in-person education again leading in daily collaborations (97). Weekly collaboration is prevalent across all modalities, particularly in online (51) and distance learning (99) environments, suggesting that these students often engage in structured group activities or discussions on a weekly basis. Monthly and rare collaborations are less common, though a notable portion of students in online (7) and hybrid (8) settings report never collaborating with peers.

The findings indicate that traditional in-person education offers the most frequent opportunities for both instructor interaction and peer collaboration. Online and distance learning modalities, while effective in providing weekly engagement, appear to offer fewer daily interaction opportunities. These insights underscore the importance of enhancing communication and collaborative tools in online and hybrid learning environments to foster more frequent and meaningful interactions among students and instructors.

Table No. 7 presents the results of a multivariate analysis examining the impact of various demographic and educational factors on learning outcomes. The dependent variables include the effectiveness of the current mode of education in achieving learning goals, engagement levels, quality of feedback, and confidence in acquired knowledge and skills. The independent variables considered are age, gender, education level, employment status, mode of education, and field of study.

Table 7: Multivariate Test - Learning Outcomes

Multivariate Tests[a]						
Effect		**Value**	**F**	**Hypothesis df**	**Error df**	**Sig.**
Age	Pillai's Trace	.025	.835	12.000	1176.000	.614
	Wilks' Lambda	.975	.838	12.000	1032.135	.611
	Hotelling's Trace	.026	.841	12.000	1166.000	.608
	Roy's Largest Root	.025	2.446[c]	4.000	392.000	.046
Gender	Pillai's Trace	.022	2.232[b]	4.000	390.000	.065

	Wilks' Lambda	.978	2.232[b]	4.000	390.000	.065
	Hotelling's Trace	.023	2.232[b]	4.000	390.000	.065
	Roy's Largest Root	.023	2.232[b]	4.000	390.000	.065
Education	Pillai's Trace	.037	1.826	8.000	782.000	.069
	Wilks' Lambda	.964	1.826[b]	8.000	780.000	.069
	Hotelling's Trace	.038	1.827	8.000	778.000	.069
	Roy's Largest Root	.029	2.863[c]	4.000	391.000	.023
Employment Status	Pillai's Trace	.138	2.804	20.000	1572.000	.000
	Wilks' Lambda	.866	2.868	20.000	1294.434	.000
	Hotelling's Trace	.150	2.919	20.000	1554.000	.000
	Roy's Largest Root	.115	9.031[c]	5.000	393.000	.000
Mode of Education	Pillai's Trace	.053	1.756	12.000	1176.000	.051
	Wilks' Lambda	.948	1.767	12.000	1032.135	.049
	Hotelling's Trace	.055	1.776	12.000	1166.000	.047
	Roy's Largest Root	.045	4.441[c]	4.000	392.000	.002
Field of Study	Pillai's Trace	.041	1.009	16.000	1572.000	.444
	Wilks' Lambda	.960	1.007	16.000	1192.107	.446
	Hotelling's Trace	.041	1.005	16.000	1554.000	.448
	Roy's Largest Root	.025	2.454[c]	4.000	393.000	.045

Tests of Between-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Age	How would you rate the effectiveness of your current mode of education in helping you achieve your learning goals?	6.927	3	2.309	2.608	.051
	To what extent do you feel engaged in your current mode of education?	2.446	3	.815	.679	.565
	How would you rate the quality of feedback you receive on your assignments and exams?	.448	3	.149	.125	.945

	How confident are you in your knowledge and skills acquired through your current mode of education?	2.865	3	.955	.892	.446
Gender	How would you rate the effectiveness of your current mode of education in helping you achieve your learning goals?	.680	1	.680	.768	.381
	To what extent do you feel engaged in your current mode of education?	6.560	1	6.560	5.465	.020
	How would you rate the quality of feedback you receive on your assignments and exams?	1.194	1	1.194	.997	.319
	How confident are you in your knowledge and skills acquired through your current mode of education?	.392	1	.392	.366	.545
Education	How would you rate the effectiveness of your current mode of education in helping you achieve your learning goals?	3.248	2	1.624	1.834	.161
	To what extent do you feel engaged in your current mode of education?	.412	2	.206	.172	.842
	How would you rate the quality of feedback you receive on your assignments and exams?	11.011	2	5.506	4.597	.011
	How confident are you in your knowledge and skills acquired through your current mode of education?	.313	2	.156	.146	.864

Employment Status	How would you rate the effectiveness of your current mode of education in helping you achieve your learning goals?	16.166	5	3.233	3.652	.003
	To what extent do you feel engaged in your current mode of education?	41.954	5	8.391	6.990	.000
	How would you rate the quality of feedback you receive on your assignments and exams?	15.296	5	3.059	2.554	.027
	How confident are you in your knowledge and skills acquired through your current mode of education?	13.308	5	2.662	2.484	.031
Mode of Education	How would you rate the effectiveness of your current mode of education in helping you achieve your learning goals?	11.395	3	3.798	4.290	.005
	To what extent do you feel engaged in your current mode of education?	8.738	3	2.913	2.427	.065
	How would you rate the quality of feedback you receive on your assignments and exams?	3.360	3	1.120	.935	.424
	How confident are you in your knowledge and skills acquired through your current mode of education?	4.456	3	1.485	1.387	.246
Field of Study	How would you rate the effectiveness of your current mode of education in helping you achieve your learning goals?	1.378	4	.344	.389	.817

	To what extent do you feel engaged in your current mode of education?	7.031	4	1.758	1.464	.212
	How would you rate the quality of feedback you receive on your assignments and exams?	3.613	4	.903	.754	.556
	How confident are you in your knowledge and skills acquired through your current mode of education?	4.209	4	1.052	.982	.417

Source: (Primary data)

The multivariate tests show that several factors significantly impact learning outcomes. Employment status (Pillai's Trace = .138, F = 2.804, p = .000) and mode of education (Pillai's Trace = .053, F = 1.756, p = .051) have the most notable effects, indicating that these variables significantly influence students' perceptions of their educational experiences.

In terms of individual learning outcomes, employment status significantly affects all four dependent variables: effectiveness in achieving learning goals (F = 3.652, p = .003), engagement (F = 6.990, p = .000), quality of feedback (F = 2.554, p = .027), and confidence in knowledge and skills (F = 2.484, p = .031). This suggests that students' employment situations play a crucial role in shaping their educational satisfaction and outcomes, likely due to the balancing act between work and study commitments.

Mode of education significantly impacts the perceived effectiveness in achieving learning goals (F = 4.290, p = .005), highlighting differences in how students evaluate their progress across online, distance learning, traditional in-person, and hybrid formats. However, engagement (F = 2.427, p = .065) and confidence in knowledge and skills (F = 1.387, p = .246) are less affected by the mode of education, implying that while students might feel differently about their goal attainment, their overall engagement and confidence remain relatively stable across different educational modalities.

Gender significantly affects engagement levels (F = 5.465, p = .020), indicating potential differences in how male and female students engage with their educational environments. Education level significantly influences the quality of feedback received (F = 4.597, p = .011), suggesting that students with higher educational attainments might have different expectations or experiences regarding feedback.

Table No. 8 displays the chi-square analysis of the factors that students perceive as most contributing to their academic success across different educational modalities. The factors

considered include the quality of instruction, study habits, access to resources, peer support, instructor support, and time management. The analysis compares responses from students in online, distance learning, traditional in-person, and hybrid modes of education.

Table 8: Chi-Square Analysis - Factors contributing most to academic success in different mode of education

What factors contribute most to your academic success in your current mode of education? * Primary Mode of Education Crosstabulation						
		Primary Mode of Education				**Total**
		Online	**Distance learning**	**Traditional in-person**	**Hybrid (combination of online and in-person)**	
What factors contribute most to your academic success in your current mode of education?	Quality of instruction	15	31	26	26	98
	Study habits	1	0	1	1	3
	Access to resources	6	21	17	10	54
	Peer support	12	31	21	22	86
	Instructor support	14	24	24	15	77
	Time management	20	25	20	29	94
Total		68	132	109	103	412
Chi-Square Tests						
	Value	**df**	**Asymptotic Significance (2-sided)**			
Pearson Chi-Square	12.018[a]	15	.678			
Likelihood Ratio	12.951	15	.606			
Linear-by-Linear Association	.145	1	.704			
N of Valid Cases	412					

Source: (Primary data)

The chi-square analysis indicates no significant differences in the perceived factors contributing to academic success across different educational modalities (Pearson Chi-Square = 12.018, df = 15, p = .678). This suggests that students from various educational backgrounds

generally agree on the primary factors that drive their academic success, regardless of the mode of education.

The quality of instruction is the most frequently cited factor, with a substantial number of students in all modalities, particularly in distance learning (31) and hybrid (26) formats, recognizing its importance. This highlights the critical role that effective teaching plays in facilitating student achievement across all educational environments. Time management also emerges as a crucial factor, especially among students in hybrid (29) and online (20) settings. This finding underscores the need for students in more flexible learning environments to develop strong time management skills to succeed academically.

Peer support is another significant contributor to academic success, particularly in distance learning (31) and traditional in-person (21) settings. The emphasis on peer support indicates that collaborative learning and social interactions are vital components of the educational experience, enhancing motivation and academic performance. Instructor support is equally important, with similar recognition across all modalities, especially in online (14) and distance learning (24) settings. This suggests that the accessibility and responsiveness of instructors are crucial for student success, highlighting the need for institutions to ensure adequate support mechanisms are in place for all students. Access to resources is noted as a significant factor, particularly in distance learning (21) and traditional in-person (17) settings. This reflects the importance of providing students with the necessary materials and tools to facilitate their learning process.

Discussion:

The findings from this study provide valuable insights into the dynamics of contemporary higher education across different educational modalities. The demographic profile reveals a predominantly young cohort, reflecting broader trends in higher education demographics where digital natives comprise a significant portion of student populations (Smith & Caruso, 2010). The balanced gender representation and diverse educational backgrounds underscore the importance of inclusive educational strategies that cater to varied student needs and preferences (Blair, 2020).

Perceived strengths and challenges across educational modalities highlight distinct patterns. Flexibility emerges as a key advantage in online and hybrid formats, aligning with previous research that underscores the convenience and accessibility these modes offer to students balancing work and study commitments (Allen & Seaman, 2013). Traditional in-person education excels in interpersonal interactions with instructors and peers, a factor consistently valued in face-to-face learning environments (Garrison & Kanuka, 2004). However, challenges such as technical issues in online learning and time management in distance education reflect

ongoing concerns that institutions must address through robust support systems and tailored resources (Bates, 2019).

The effectiveness of teaching methods, as perceived by students, shows a preference for interactive and collaborative approaches across all modalities. This aligns with literature emphasizing the pedagogical shift towards active learning strategies that enhance student engagement and retention (Prince, 2004). The lower efficacy attributed to traditional lectures underscores the evolving expectations of learners for dynamic and participatory instructional methods that promote deeper learning experiences (Freeman *et al.*, 2014).

Gender and employment status marginally influence overall satisfaction with educational experiences, suggesting nuanced perceptions based on individual circumstances. These findings resonate with studies highlighting the differential impact of demographic variables on student satisfaction and engagement in higher education settings (Chen & Jang, 2010). Tailoring educational programs to accommodate these diverse needs is crucial for fostering a supportive and inclusive learning environment that enhances student outcomes (Tinto, 1993).

Factors contributing to academic success, such as the quality of instruction, peer support, and access to resources, are consistently valued across educational modalities. This underscores the universal importance of supportive learning environments that facilitate both academic achievement and personal growth (Kuh, 2008). Ensuring robust instructor support and resource accessibility remains imperative for institutions aiming to optimize student success and satisfaction in increasingly diverse educational landscapes (Lizzio, 2002).

Findings and Conclusion:

The demographic profile of the respondents reveals a young and diverse group, with the majority aged between 18 and 24 years (54.1%), followed by those aged 25-34 (30.8%). The age distribution indicates a relatively youthful population engaging in various educational modes. Gender representation is balanced, with females comprising 51.2% and males 48.8% of the sample. Educational attainment is predominantly at the bachelor's level (78.9%), with smaller proportions holding master's (16.0%) and doctoral degrees (5.1%). In terms of employment, 57.3% of respondents are employed full-time, while 24.5% are full-time students, and the remaining are part-time students (5.6%), part-time employed (10.9%), unemployed (0.5%), or retired (1.2%). The primary modes of education are varied, with 32.0% engaged in distance learning, 26.5% in traditional in-person education, 25.0% in hybrid formats, and 16.5% in online education. The dominant field of study is Business (63.6%), followed by Social Sciences (12.9%), Humanities (11.2%), Arts (10.7%), and STEM (1.7%).

The analysis of perceived strengths across different modes of education indicates significant associations. Flexibility is most frequently cited as a strength in online and hybrid formats, while traditional in-person education scores the lowest in this regard. Accessibility is

similarly valued in online and hybrid education but less emphasized in traditional in-person and distance learning. Traditional in-person and distance learning modes are highlighted for their strong interaction with instructors and peers, suggesting these modes facilitate better interpersonal engagement. The quality of resources is recognized as a strength in hybrid and distance learning settings compared to traditional in-person and online education.

Challenges vary significantly across educational modalities. Technical issues are predominantly reported by online and hybrid education students, whereas traditional in-person and distance learning students face these challenges less frequently. A lack of interaction is the most significant challenge for online education, highlighting the need for improved communication tools and strategies. Time management is a substantial challenge for students in distance learning, suggesting the asynchronous nature of this modality requires better time management skills. Motivation is another major challenge reported by traditional in-person and hybrid students, indicating a need for strategies to enhance student engagement. The quality of instruction is a significant concern for distance learning and traditional in-person students, underscoring the importance of maintaining high instructional standards across these modalities.
Teaching methods' effectiveness does not show significant variation across different educational modalities. Interactive discussions and group projects are universally valued, indicating a preference for collaborative and engaging teaching approaches. Hands-on activities are particularly favored in distance learning and hybrid education, highlighting the importance of practical engagement in these formats. Multimedia resources are well-regarded, especially in distance learning, reflecting the importance of diverse content delivery methods. Lectures are perceived as less effective across all modalities, suggesting a shift towards more interactive teaching methods. Self-paced learning is primarily valued in distance learning, aligning with its flexible nature.

Overall satisfaction with the current mode of education is marginally influenced by gender and employment status, suggesting differences in perception based on these factors. Gender shows a near-significant influence on satisfaction, indicating that male and female students might perceive their educational experiences differently. Employment status also approaches significance, implying that job responsibilities impact satisfaction levels. Other factors, including age, highest level of education, primary mode of education, and field of study, do not significantly affect overall satisfaction. The average satisfaction rating is 3.9369 on a scale from 1 to 5, suggesting moderate satisfaction among students.

Interaction with instructors and peers varies across educational modalities, with traditional in-person education facilitating the most frequent daily interactions. Online and distance learning environments predominantly offer weekly interactions, reflecting their structured yet less frequent nature. Collaboration with peers follows a similar trend, with

traditional in-person education leading in daily collaborations. The findings suggest that traditional in-person education offers the most frequent opportunities for both instructor interaction and peer collaboration, whereas online and distance learning modalities provide fewer daily interaction opportunities.

The findings underscore the importance of considering employment status and educational modality when designing and implementing educational programs to enhance learning outcomes. Educational institutions should tailor their support and resources to accommodate the diverse needs and circumstances of their students to foster better educational experiences and outcomes.

Factors contributing to academic success are perceived similarly across different educational modalities. Quality of instruction is the most frequently cited factor, highlighting its critical role in facilitating student achievement. Time management is crucial, especially in hybrid and online settings, emphasizing the need for strong time management skills in flexible learning environments. Peer support is significant, particularly in distance learning and traditional in-person settings, indicating the importance of collaborative learning. Instructor support is equally recognized across all modalities, underscoring the necessity for accessible and responsive instructors. Access to resources is also important, particularly in distance learning and traditional in-person settings, reflecting the need for adequate materials and tools to support the learning process.

References:

1. Allen, I. E., & Seaman, J. (2013). Changing course: Ten years of tracking online education in the United States. Babson Survey Research Group.
2. Allen, I. E., & Seaman, J. (2017). Digital learning compass: Distance education enrollment report 2017. Babson Survey Research Group.
3. Bates, A. W. (2019). Teaching in a digital age: Guidelines for designing teaching and learning. Tony Bates Associates Ltd.
4. Bernard, R. M., Abrami, P. C., Lou, Y., Borokhovski, E., Wade, A., Wozney, L., .. & Huang, B. (2004). How does distance education compare with classroom instruction? A meta-analysis of the empirical literature. Review of Educational Research, 74(3), 379-439.
5. Black, P., & Wiliam, D. (1998). Assessment and classroom learning. Assessment in Education: Principles, Policy & Practice, 5(1), 7-74.
6. Blair, R. (2020). The digital native: A myth or reality? Educational Research and Evaluation, 26(1-2), 53-65. doi:10.1080/13803611.2020.1743212
7. Chen, C. S., & Jang, S. J. (2010). Motivation in online learning: Testing a model of self-determination theory. Computers in Human Behavior, 26(4), 741-752. doi:10.1016/j.chb.2010.01.011

8. Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. AAHE Bulletin, 39(7), 3-7.
9. Freeman, S., Eddy, S. L., McDonough, M., Smith, M. K., Okoroafor, N., Jordt, H., & Wenderoth, M. P. (2014). Active learning increases student performance in science, engineering, and mathematics. Proceedings of the National Academy of Sciences, 111(23), 8410-8415. doi:10.1073/pnas.1319030111
10. Garrison, D. R. (2011). E-learning in the 21st century: A framework for research and practice. Taylor & Francis.
11. Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. The Internet and Higher Education, 7(2), 95-105. doi:10.1016/j.iheduc.2004.02.001
12. Kuh, G. D. (2008). High-impact educational practices: What they are, who has access to them, and why they matter. Association of American Colleges and Universities.
13. Lizzio, A. (2002). Self-efficacy and perceptions of control in undergraduate tertiary study: An investigation of the role of prior learning experience. Research and Development in Higher Education, 25, 445-452.
14. Mayer, R. E. (2009). Multimedia learning (2nd ed.). Cambridge University Press.
15. Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2010). Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies. US Department of Education.
16. Moore, M. G., & Kearsley, G. (2011). Distance education: A systems view of online learning (3rd ed.). Wadsworth.
17. Perraton, H. (2000). Open and distance learning in the developing world. Routledge.
18. Prince, M. (2004). Does active learning work? A review of the research. Journal of Engineering Education, 93(3), 223-231.
19. Rovai, A. P. (2002). Building sense of community at a distance. International Review of Research in Open and Distributed Learning, 3(1), 1-16.
20. Simonson, M., Smaldino, S., Albright, M., & Zvacek, S. (2015). Teaching and learning at a distance: Foundations of distance education (6th ed.). Information Age Publishing.
21. Smith, S., & Caruso, J. B. (2010). ECAR study of undergraduate students and information technology. EDUCAUSE Center for Applied Research.
22. Tomlinson, C. A. (2001). How to differentiate instruction in mixed-ability classrooms (2nd ed.). ASCD.

FINTECHS: A NEW PARADIGM SHIFT IN BUSINESS AND BANKING

G. Sureshkrishna
Department of Management Studies,
Periyar Maniammai Institute of Science & Technology
(Deemed to be University), Thanjavur
Corresponding author E-mail: sureshkrishna@pmu.edu

Introduction:

Innovation and technical advancements over the last ten years have propelled the fintech industry from the periphery to the forefront of the financial services industry. And thanks to the strong expansion of the banking industry, quick digitization, shifting consumer preferences, and growing support from regulators and investors, the growth has been intense and quick. Fintechs have significantly changed some segments of the financial services industry over the past ten years with their creative, unique, and customer-focused value propositions, cooperative business structures, and flexible, cross-functional teams.

Publicly listed fintechs had a $550 billion market capitalization as of July 2023, which is a two-fold rise from 2019.1. Furthermore, as of the same time frame, there were over 272 fintech unicorns, valued at a total of $936 billion, a seven-fold rise from 39 companies that were worth at least $1 billion five years prior.

Unpredictable Macro Environment

A market correction in 2022 caused this rapid growth momentum to slow down. Even now, the effects are still being felt. All things considered, there has been a downturn in funding and transaction activity, fewer IPOs and SPAC (special purpose acquisition company) filings, and fewer new unicorn creations. The macroenvironment is still difficult and unpredictable. Fintechs are stepping into a new age of value creation in this kind of situation. Businesses in the past were encouraged to be innovative, to take calculated chances, and to pursue expansion at any costs. Fintechs can no longer afford to sprint in the new era due to a difficult funding climate. They have to run more slowly and steadily to stay competitive.

Growth of Fintech then and now

The latter part of the previous decade saw record funding raised by the fintech sector. Funding for venture capital (VC) increased by 17% annually, from $19.4 billion in 2015 to $33.3 billion in 2020 (see sidebar "What are fintechs?"). Throughout this time, deal activity rose in lockstep, with a 1.2-fold increase in the total number of deals.

The industry fared even better in 2021, thriving on the backs of the pandemic-triggered acceleration in digitization and a financial system awash with liquidity. Funding increased by 177 percent year over year to $92.3 billion, and the number of deals grew by 19 percent. The

funding surge proved to be a one-off event. Funding levels in 2022 returned to long-term trend levels as inflated growth expectations from the 2021 extraordinary results were reanchored to business-as-usual levels, and as deteriorating macroeconomic conditions and geopolitical shocks destabilized the business environment. The correction caused fintech valuations to plummet. Many private firms faced down rounds, and publicly traded fintechs lost billions of dollars in market capitalization. Fintech funding faced a 40 percent year-over-year funding decline, down from $92 billion to $55 billion. Yet, when analyzed over a five-year period, fintech funding as a proportion of total venture capital funding remained fairly stable at 12 percent, registering only a 0.5 percentage point decline in 2022.

The fintech sector still faces many obstacles in the future, but there are also many doors that need to be opened. Investors' evaluation of risk and return has changed as a result of their adaptation to a new financial paradigm featuring increased interest rates and inflation. Concurrently, there are increasing prospects for value creation as a result of the once-in-a-generation technological transformation. The revenues in the fintech sector are predicted to expand at a rate that is about three times faster than that of the traditional banking sector. Fintechs might see annual revenue growth of 15% over the next five years, compared with traditional banking's 6% annual revenue growth.

Between 2023 and 2028, the fintech sector's revenues are anticipated to increase at a rate that is almost three times faster than that of traditional banking. These developments are also paralleling, and in many respects even accelerating, the fintech industry's growth. Three themes emerge from our study and interviews to help influence the next phase of fintech development. First and foremost, fintechs will continue to profit from the dramatic upheaval of the banking sector, the quick uptake of digital technology, and the global expansion of e-commerce, especially in developing nations. Second, there is still opportunity for fintechs to flourish inside the burgeoning financial-services sector, even in the face of immediate headwinds. Ultimately, not all fintech companies are suffering equally from the market correction: some verticals and phases of growth have seen greater resilience from fintechs than others.

Radical Overhaul of the Banking Sector

The future of banking will be characterized by significant change. In this new era of cross-industry competition, banks and nonbanks are vying to satisfy different client needs in five areas: mass wholesale intermediation, investment advisory, daily banking, sophisticated financing, and banking as a service (BaaS).

Fintechs and the larger financial-services industry are expanding at the same time thanks to macro tailwinds. Approximately 73% of all bank contacts occur online these days, proving that digital adoption is no longer a hypothetical issue.

Furthermore, worldwide retail customers today trust and are as satisfied with fintechs as they are with traditional banks. Four In fact, according to a McKinsey survey conducted in 2021, 41% of retail consumers stated they intended to become more familiar with fintech products. Fintech products are more in demand—and needed—in developing economies. For instance, about 800 million mobile accounts worldwide, or nearly half of all accounts, were in Africa in 2022.

Fintech solutions are increasingly in demand from B2B companies. Thirty-five percent of US SMEs in 2022 explored leveraging fintechs for lending, better pricing, and easier integration with their current platforms. Moreover, 20% of SMEs in Asia used fintechs for lending and payment processing.

Fintechs must guarantee they have sufficient resources and capacity to comply with rapidly changing rules in order to take advantage of this demand. Buy-now-pay-later companies are becoming subject to financial regulation in a few EU members, including Ireland.

Role of Emerging Markets

A large portion of this revenue growth will come from emerging economies. Thirteen percent of fintech's global revenues in the previous year came from Latin America, Africa, Asia-Pacific (apart from China), and the Middle East. According to our estimates, by 2028, the total will rise to 29 percent. However, by 2028, North America's share of global fintech revenues—which currently stands at 48%—is predicted to drop to 41% (Fig.1)

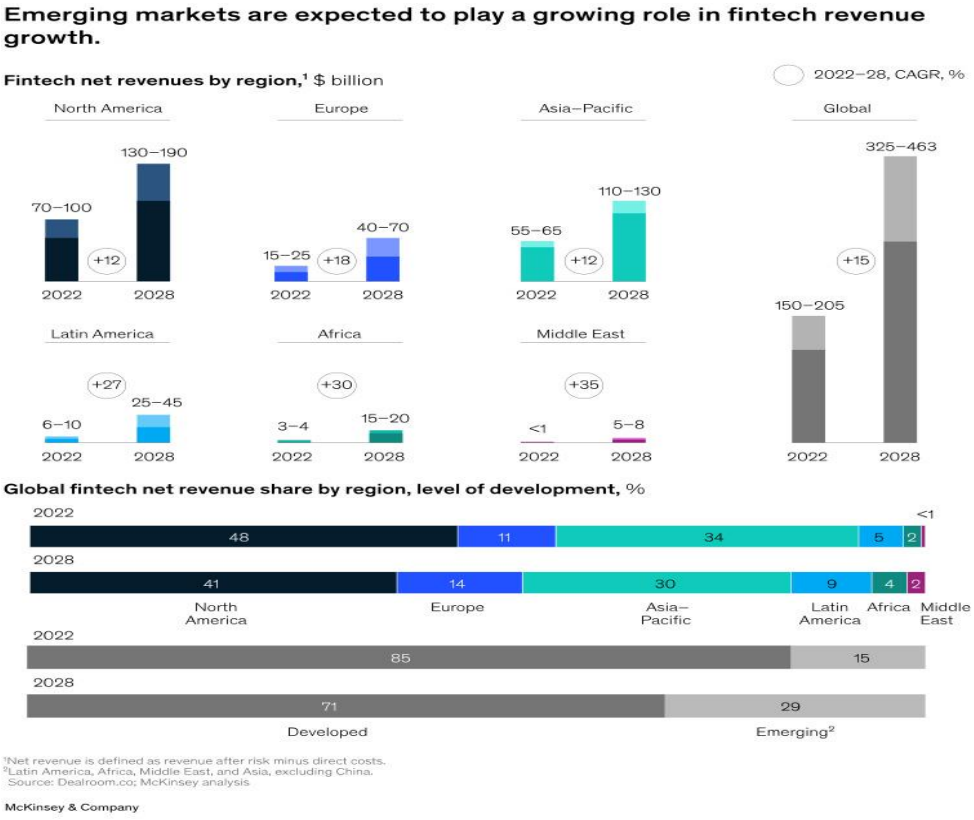

Figure 1: Emerging markets Fintech revenue growth

Fintech penetration is already the greatest in the world in emerging nations, but a few patterns highlight its potential for expansion. There are large numbers of people in these economies who are underbanked and who do not have access to typical banking services. When it comes to filling these gaps, fintechs have had some success. Furthermore, even while the market capitalization of private fintech firms has grown significantly over the last ten years, the industry's share in the public market is still very limited.

A New Paradigm in Banking

In the past two years, banks have experienced a notable shift in their operations, with their digital transformation initiatives accelerating at an impressive rate. Customers are using digital devices at an all-time high in banks, which are now heavily digitalized. The banking sector continues to exhibit considerable innovation as banks adjust to the shifting interests and demographics of their clientele. Simultaneously, they need to constantly adjust to the obstacles posed by the trend of banking democratization, in which bigtechs and fintechs pose a fresh danger to established banks.

Digitization without Intelligence:

The pace at which banks have adopted digitization in the past 24 months has been nothing short of extraordinary. Prior to the Covid-19 pandemic, projects that were anticipated to take ten years or more to complete were completed in less than two years. There is no denying that we now live and work in a truly digital world, but as we start a new year, the banking industry still has a fundamental issue: despite banks' high levels of digitization, they are not as data- or technologically-savvy as many of their fintech competitors.

While banks may have become ‘digital,’ they’re now in a position where they lack the experience and intelligence to drive forward their digitization efforts and reap rewards for themselves and their customers. As traditional data kings, banks now must learn how to leverage their data, and use it innovatively and conveniently while ensuring it is secure. Unfortunately, many banks still lack the technology to truly use this data intelligently – which is a massive missed opportunity

The Transition

Fintech companies are transitioning from hypergrowth to sustainable growth, albeit this growth may not be evenly distributed throughout the entire organization. Fintechs can reinvest their money into high-performing segments by selling off underperforming portions of their portfolios and pulling back from areas with slow growth. This tactic is known as "shrinking to grow." Companies who employ this strategy are 1.4 times more likely to beat their peers. An executive of a Latin American fintech told us, "In the past, many fintechs expanded geographically, even if it didn't make much sense." "They must now stop expanding where they are not profitable and concentrate on their profitable segment and geography."

A few fintech companies have purposefully adopted a shrink-to-grow approach, reversing course if an expansion plan did not work out as planned or if the local market offered greater room for advancement. For instance, German robo-adviser Scalable Capital stated that it will be concentrating on other markets by ending its activities in Switzerland in 2020 due to the Financial Services Act's introduction, which would have forced the company to oversee two regulatory frameworks concurrently. In the meantime, Canadian online investment platform Wealthsimple left the UK and the US in 2021 in order to focus on its home retail market and broaden its range of products into other financial services sectors. Similar to this, San Francisco-based fintech company LendingClub closed its retail peer-to-peer platform, Notes, in late 2020 in order to concentrate on

The Route to Long-Term, Steady Growth

Fintechs would be well to carefully consider their next course of action given the current market turbulence. After all, the environment in which they operate has changed significantly from previous years. Fintechs had access to finance during their hypergrowth period, which enabled them to take risks with their business plans. They might prioritize generating revenue, with the expectation that profits would follow. The significance of extracting and exploring data. Throughout the same time span, the average funding round value dropped by 50%.17. Fintechs are under pressure from these developments to come up with innovative ways to lengthen runways and modify their business models in order to extend the time that shrinking sums of money last.

Fortunately for the industry, the days of growth at any cost are over. Fintechs and their investors are focusing on profitability in a liquidity-constrained market rather than just growing the number of customers they adopt or their overall revenue. "Previously, growth equity investors based in Africa would reward fintech companies that demonstrated growth regardless of the cost, resulting in robust valuations," the investor stated. "Right now, the addressable market, profitability, and business sustainability are the most important factors."

The significance of Data Exploration and Extraction

Data extraction and exploration will become essential in 2024 to help banks solve this difficulty. Large-scale data exploration initiatives will be implemented by banks to thoroughly analyze and scrutinize the data they hold, enabling them to gain a complete understanding of their data assets. This covers all types of data, including foreign exchange, payroll, and transactional data.

Big banks are currently ill-prepared or unable to take full advantage of the data they possess; this is an area in which fintechs and smaller companies flourish. For whatever reason, a lot of banks are unwilling to give up on their primary emphasis of banking and lack the necessary tools to fully utilize the data. However, there's not much use in holding

However, holding such essential data is meaningless if a bank is unable to apply it to generate meaningful change or value. To genuinely offer a frictionless customer experience in the upcoming year, banks will need to step up their game, adopt a technology-first approach to data science, and establish partnerships with outside service providers. That being said, there is some risk involved. Misuse and improper handling of data may result once it leaves the bank's control and is accessed by third parties. Such collaborations can be problematic if improperly handled, so banks must put in place clear procedures to reduce and eliminate any risks that might jeopardize consumer confidence.

In the end, banks of the future will have to set themselves apart by showing that they are involved, accessible, and pertinent to their clients as they go about their everyday lives. They will also need to concentrate on earning the trust of their clients by acting as trusted advisors.

Making Good Use of Artificial Intelligence (AI)

Despite having an abundance of data, banks frequently have serious technological gaps. Fortunately, they can close the gaps between simply having data and effectively using it with the aid of artificial intelligence, one of the most important technologies of our day.

The usage of AI in banking is not new; for years, numerous banks have been utilizing the technology to create their own chatbots and virtual assistants. In order to help customers in its flagship branch on Fifth Avenue in New York, as well as later in Miami, Florida, and Beverly Hills, California, a major international bank previously installed a humanoid on the bank floor. Customer support tasks like transferring credit card information and instructing clients on how to open accounts are handled by it. Financial institutions can use AI to conduct extensive stress tests with the assistance of solution providers such as Simudyne. While AI was first only used in front office settings, banks have gradually started using AI in middle office functions as well, including lending risk management, fraud prevention, client segmentation, KYC verification, and credit underwriting.

AI will undoubtedly transform pricing practices across all businesses, including the banking sector, in its next stage of development. Pricing teams find it difficult to stay on top of the many products and services offered in this sector, even within the same category. Aside from these difficulties, pricing teams also have to cope with dynamic client behavior and shifting market conditions, which frequently makes choosing the best price a very difficult assignment for superhumans.

Artificial Intelligence (AI) has the potential to assist banks in making optimal pricing decisions and increasing pricing transparency by monitoring buying trends and competitive product prices. This will eliminate the "black box" effect, which may lead to mistrust of price recommendations and clarify the variables underlying each decision. There are virtually limitless options available to banks willing to think creatively. AI can assist banks in reducing customer

experience friction. By carrying out the required checks and adhering to all procedures, banks can use AI, for instance, to reduce the time needed for KYC and AML compliance requirements. Monzo, a digital bank, achieved this through meticulous onboarding. Its main objectives were to increase verification speed, decrease signup abandonment rates, minimize manual review, and maximize verification accuracy. Banks can now take the initiative and design a bank that is mostly powered by algorithms, nudging its clients to make wise decisions that take their financial objectives into account at the appropriate times.

An Essential Component of a Bank's Machinery is Still its Environment

Even though many have claimed that legacy systems are a bank's weak point, they are nevertheless essential to the industry's advancement and innovation. A bank's ecosystem needs to be extremely resilient as we move into 2024, but it also needs to get more flexible. Due to the existing lack of ecosystem flexibility, specialized challenger businesses and Application Programming Interface (API)s have a chance to compete in the banking market. By 2024, banks will need to put in place a middle layer with the intelligence to convert data from their core ecosystem into insights that can be put to use. The bank will be more adaptable and flexible to satisfy consumer needs while capitalizing on the advantages of a strong core thanks to this middle layer, which will increase the efficacy of the robust core system. This can assist banks in making wise judgments to maintain profitability while efficiently providing value.

Indian Scenario:

Indian fintechs have been focused on converting market challenges or financial service gaps into opportunities. And the local, home grown, small businesses (MSMEs) spread across the geographic expansion of the country present a very attractive and unique opportunity for fintechs. accounting-focused digital apps and platforms have enabled many such businesses. Accounting focused digital apps and platforms have enabled many businesses to prepare, organize and analyse their financial records easily and accurately. Tasks that once took hours or days can now be completed in just a few clicks. A country that has primarily been a cash-driven economy is now pivoting towards digitalization and creating an ecosystem for fintech, further helping entrepreneurs explore new solutions.

Conclusion:

Bigtech companies that provide customers with a comprehensive solution to their problems must compete with traditional banks in order for the banking sector to stay relevant. And the only way banks can achieve that is by swiftly implementing a platform strategy, creating their own ecosystems, taking control of the customer journey, and expanding their own and their partners' products to comprehensively address consumer issues. Effective value exchange between clients, banks, and partners will be ensured by this kind of engagement carried out on an extremely efficient platform. Value exchanges are crucial because they allow customers and

banks to come to an agreement at the right cost, during the right customer experience, and—most significantly for banks—at the right profit margin.

While 2023 brought about a lot of innovation in the banking industry in terms of digitalization and led banks to rethink their customer experience strategies, 2024 has the ability to fully capitalize on this innovation and provide banks with the opportunity to take the lead.

References:

1. Arner, D. W., Barberis, J., & Buckley, R. P. (2016). The evolution of fintech: A new post-crisis paradigm? *Georgetown Journal of International Law*, *47*(4), 1271-1319.
2. Gomber, P., Kauffman, R. J., Parker, C., & Weber, B. W. (2018). On the fintech revolution: Interpreting the forces of innovation, disruption, and transformation in financial services. *Journal of Management Information Systems*, *35*(1), 220-265. https://doi.org/10.1080/07421222.2018.1440766
3. Lee, I., & Shin, Y. J. (2018). Fintech: Ecosystem, business models, investment decisions, and challenges. *Business Horizons*, *61*(1), 35-46. https://doi.org/10.1016/j.bushor.2017.09.003
4. Milne, A. (2016). Competition and the rationalization of European banking. In R. E. Litan & M. Pomerleano (Eds.), *The future of domestic capital markets in developing countries* (pp. 39-61). Brookings Institution Press.
5. Philippon, T. (2016). The fintech opportunity. *National Bureau of Economic Research*, Working Paper No. 22476. https://doi.org/10.3386/w22476
6. Schindler, J. W. (2017). Fintech and financial innovation: Drivers and depth. *Finance and Economics Discussion Series, 2017-081*. https://doi.org/10.17016/FEDS.2017.081
7. Thakor, A. V. (2020). Fintech and banking: What do we know? *Journal of Financial Intermediation, 41*, 100833. https://doi.org/10.1016/j.jfi.2019.100833
8. Vives, X. (2017). The impact of Fintech on banking. *European Economy - Banks, Regulation, and the Real Sector, 2017*(2), 97-105. https://doi.org/10.2139/ssrn.3022277
9. Wang, Y., & Siau, K. (2018). Artificial intelligence, machine learning, automation, robotics, future of work, and future of humanity: A review and research agenda. *Journal of Database Management, 29*(1), 61-79. https://doi.org/10.4018/JDM.2018010104
10. Zalan, T., & Toufaily, E. (2017). The promise of fintech in emerging markets: Not as disruptive. *Contemporary Economics*, *11*(4), 415-430. https://doi.org/10.5709/ce.1897-9254.251

IMPACT OF SKILL BASED EDUCATION OF COMMERCE AND MANAGEMENT STUDENTS AS PER NATIONAL EDUCATION POLICY 2020 - A STUDY

Parag Vasantrao Pimpalapure
Department of Commerce,
Doshi Vakil Arts College & G.C.U.B. Science College, Goregaon-Raigad
Corresponding author E-mail: pimplapureparag@gmail.com

Abstract:

Commerce and Management education plays an important role in the economy of a country as it affects all sectors like manufacturing, service industry, research and development, banking etc. As a whole, finance is the nervous system of our economy and the knowledge of financial planning is related to Commerce and Management. The present education policy in India is mainly focusing on the theoretical aspects in which students are trained in vocational studies. It is found that, there is a lack of practical education in existing educational system. As a result, there is a huge shortfall in meeting global employment opportunities. The National Education Policy-2020 aims to develop creative abilities, skills and analytical thinking that are needed in the global job market. In this research paper overview of national education policy in terms of commerce and management education, study of changes in commerce and management education, benefits of imparting commerce and management education as per National Education Policy. National Education Policy **(**NEP 2020) have discussed the challenges ahead etc.

Keywords: NEP, Management Education, Creativity, Improvement.

Introduction:

The first Education Policy (NEP 1968) based on the recommendations of the Kothari Commission was introduced by the Indira Gandhi Government in 1968. This policy required free and compulsory education for children up to 14 years of age. The Second Education Policy (NEP 1986) was introduced by the Rajiv Gandhi government in 1986. The policy aims to eliminate disparities in education and provide equal educational opportunity to everyone, especially Scheduled Tribes (ST) and Scheduled Castes (SC). In 1992, Prime Minister Shri P. V. Narsimha Rao change was made. On 29th July 2020, the Union Cabinet launched the National Education Policy aimed at revolutionizing the National Education Policy **(**NEP 2020) to Approved. This policy replaced the policy in force in India since 34 years ago. The policy covers various aspects of education including commerce and management education. The main objectives of this educational policy is to radically transform the education system of the country by bringing quality, diversity and integrity in education to make education more holistic, flexible and attuned to the needs of the 21st century students. This policy will always be remembered by people even

for the radical changes proposed in education. These changes will have an impact on all stakeholders such as students, teachers, educational institutions and parents as well as society and also the nation. Because the foundation of any nation's success is the education system. Many western countries have become successful because of their education systems. India is not untouched by this culture. Therefore, these new courses have been started in order to increase the quality of education in India to get business-oriented education, to make the students get a job or to start their own business. The economy of a country greatly benefits from the study of commerce and management as it affects all economic sectors including banking, manufacturing, services and technological advancement. Finance is the brain of every business and understanding how to manage it involves both management and commerce. The current education policies in India focus mainly on theoretical subjects, leaving students with little opportunity to learn, which is a major barrier to availing international career opportunities. To meet the demands of the global job market, the National Education Policy 2020 aims to enhance creativity among students, emphasizing skill development.

Objectives

1. To Overview of National Education Policy in terms of Commerce and Management Education.
2. To study the changes in commerce and management education.
3. To find advantages of imparting Commerce and Management Education as per National Education Policy
4. To find out challenges ahead before National Education Policy **(**NEP 2020).

Overview of National Education Policy in terms of Commerce and Management Education

Among the world's eight billion people, 99 percent are job seekers and 1 percent are job creators. There is a huge gap between the demand for employment and the availability of employment, but lack of skills is seen among the students to get employment opportunities. The skills that students possess do not see much demand in the job market. The expectations of the industries are not met by the skills possessed by the students. This is one of the major reasons why commerce and management education has been gaining attention over the past few years for imparting skill based education. These skills provide students with analytical, computational, managerial skills that enable students to think creatively outside the box. For this, the focus of this policy is to provide multidisciplinary education by incorporating the knowledge of various arts into the curriculum.

The National Education Policy recommends the strengthening of Indian languages including Pali, Prakrit, Sanskrit and all language departments in higher educational institutions and the use of mother tongue or vernacular as the medium of instruction. Until the implementation of the new National Education Policy in 2020, the Indian education system had

many flaws. Memory was given more priority than understanding concepts. Each education board had different learning methods for different skills. Moreover, in previous years, more emphasis was placed on learning or mastering traditional subjects and developing professional skills was neglected.

The National Education Policy has taken note of all the shortcomings and limitations of the Indian education system. Moreover, the policy aims to bridge the gap between vocational and formal education. According to the National Education Policy, school education will be given to students in the age group of 3-18 years. The school curriculum in the NEP includes three years of pre-school education for children aged 3-6 years followed by 12 years of formal education. A multidisciplinary curriculum is designed for secondary level students in the age group of 14 to 18. It can develop both professional and academic skills.

"Three-language formula" has been given in the National Education Policy. In which the mother tongue is Marathi, the national language is Hindi and English is the international language. As per NEP, the mother tongue of students should be the medium of instruction. The main reason behind this is that students learn and understand any subject quickly in their mother tongue. The National Education Policy 2020 aims to provide a more flexible and inclusive education system with a focus on holistic development of students. The policy also emphasizes the use of technology to promote education, teacher training and development, and multilingualism.

The home language, mother tongue, local language or regional language shall be used as the medium of instruction up to at least Class 5, but from Class 8 onwards the home or local language shall be taught wherever practicable. Both public and private schools will have to follow this.

There will be no formal distinctions between arts and sciences, curricular and extra-curricular activities, or vocational and academic programs under the National Education Policy. Students can choose their favorite subject from various subjects (Open Elective) in the entire stream. Internship will be included in vocational education in sixth Semester. Under the National Education Policy, undergraduate degrees can be obtained in three or four years. During this period, there will be many options to exit from education (Multiple Entry, Multiple Exit). A certificate will be awarded to the student on completion of 1 year course. Diploma after 2 years, Degree after 3 years and Degree with Honors / Research after 4 years. In this education process, if the students complete the course and pass the examination, they will be given credits every semester every year and the college has also been instructed to create an Academic Bank of Credit (ABC ID) for each student to store these credits in digital form. It will accumulate the credits obtained in all the years.

The National Education Policy seeks to bring about revolutionary structural reforms at the higher education level. This degree program promotes a three or four-year degree program structure, allowing for multiple exit points for learners. The government has already taken initiatives to bring distance education programs at par with regular courses. Measures such as online courses, digital repositories, improved student services and funding for research and credit-based accreditation of MOOCs are being taken. National Educational Technology Forum (NETF) is an autonomous body. It will be initiated to provide a free exchange of ideas related to the use of technology to enhance the educational experience. This integration of technology is expected to improve classroom processes, contribute to teachers' professional development, and streamline the management of instructional planning. An important aspect of national education policy is to promote internationalization of education by encouraging global collaboration with educational institutions- universities, research institutes. This will not be limited to students only but faculty exchange programs will also be encouraged. Meanwhile, one of the aims of the policy is to allow the world's top universities to open their campuses in India.

Main principles of this policy –

- Flexibility, so that learners can choose their learning paths;
- Equal promotion of arts, science, commerce, physical education and other extra-curricular activities so that students can choose subjects according to their interest.
- Multi-disciplinary approach (science, social sciences, arts, humanities and sports) Emphasis on conceptual learning rather than rote learning, creativity and critical thinking.
- Cultivate life skills like cooperation, teamwork, empathy, resilience.
- A regular form of assessment for learning rather than the existing symmetrical assessment. The National Education Policy aims to increase the total enrollment ratio in higher education including vocational education from 26.3 percent in 2018 to 50 percent by 2035 and to add 3.5 crore new seats in higher education institutions.

Study the Changes in Commerce and Management Education

National Education Policy has been implemented in Autonomous Colleges as well as Post Graduate Courses from 2023-2024 in Affiliated Colleges this year from 2024-2025. In this course students have to take 3 to 4 main subjects of Commerce course. In addition, students have to choose 2 subjects (Open Elective) from Arts Department or Science Department.

In the Vocational Skill Course, students will be taught various skills. This course enables the student to start his own business in future (eg Commercial Mathematics). Skill Enhancement Course – Skills in various courses in commerce will be developed on the basis of demonstrations. E.g. Practical Statistics in Commerce. Ability Enhancement Course Under this course, education is given to the students to acquire knowledge of the language. It includes Marathi, English, Hindi e. Includes languages. Under the Value Education system, Indian

Constitution, Intellectual Property Rights are taught. In this Indian Knowledge System course, students are given information on various traditional subjects. NCC, NSS, DLLE, Sports, Cultural, On the Job Training have also been included in the syllabus now. 60% theory paper and 40% internal marks will be given in the evaluation of all the above courses.

Advantages of imparting commerce and management education as per National Education Policy:

Encouraging Entrepreneurship:

Education as per National Education Policy 2020 will boost entrepreneurship and innovation in the country. With students studying commerce and management, it will be possible to inculcate an entrepreneurial mindset in them by providing them with the necessary support, guidance and exposure to entrepreneurship-related activities.

Technology Integration:

As per the National Education Policy 2020, emphasis has been placed on the integration of technology in commerce and management education. This education promotes the use of technology in the teaching and learning process, which can enhance the overall learning experience, facilitate research and prepare students for the digital economy.

Research and Innovation:

The National Education Policy 2020 emphasizes the importance of research and innovation in higher education, including commerce and management education. It encourages education management institutions to focus on research activities, contribute to the development of management knowledge and address real-world business challenges through research.

Professional Development of Faculty:

The National Education Policy 2020 focuses on professional development of commerce and management faculty in higher education institutions. Professors are imparters of high-quality education to the students so the main objective is to enhance teaching skills as well as research capacity among the professors.

Industry-Academia Collaboration:

The National Education Policy 2020 emphasizes collaboration between academia and industry. It is particularly useful for commerce and management education, where industry, exhibitions, internships and practical projects play a vital role in preparing students for the modern corporate world.

Emphasis on Skill Development

The National Education Policy 2020 emphasizes on developing both cognitive and practical skills in students. Technical education aims to develop technical skills in students as well as develop problem solving skills

.

Enhancement of Educational Quality:

The National Education Policy 2020 focuses on enhancing the quality of education in all sectors including commerce and management education. This policy encourages management institutions to maintain high standards of education and provides support for accreditation and quality improvement.

Conclusion:

- The National Education Policy-2020 has been designed to provide modern and state-of-the-art educational services that can fulfill the vision of a developed India.
- Improving quality, diversity and integrity in the education system through university education are the three main objectives of the National Education Policy-2020. Commerce and management education is an important component of this education system and the policy aims to improve its effectiveness and relevance to meet the growing needs of the business world and society.
- Implementation of National Education Policy-2020 may vary by different states, universities and institutes in India.
- National Education Policy 2020, proposes selection of appropriate subject combination for study, introduction of vocational courses at an early stage, change in examination/marking pattern, focus on talent based learning and many other tools. Through this effort the industry will get trained human resource.
- This policy will focus on the strong foundation of each student and develop holistic growth.
- This new policy is expected to focus on digital education through digitization so that every student can get quality education.
- Under the new education policy having teachers in the regional language would be easier to understand, development of virtual hi-tech labs is thought to enhance e-learning.
- Various educational loans and financial aid to support economically backward students can provide quality, flexible and inclusive education.

References:

1. Ministry of Human Resource Development, Government of India. (2020). *New Education Policy 2020* [Hindi version]. https://www.noticebard.com/wp-content/uploads/2020/07/NEP_final_HINDI_0.pdf (Accessed on 30th August 2020).
2. StudyIQ. (2020). *New Education Policy 2020: A complete analysis* [PDF]. https://www.studyiq.com/blog/new-education-policy-2020-completeanalysis-free-pdf/ (Accessed on 30th August 2020).
3. Tiwari, A., & Pandey, S. (2020). Study of NEP 2020: Issues, approaches, challenges, opportunities, and criticism. *Journal of Advances and Scholarly Researches in Allied Education*, *XVII*(X), 28-35.

4. Ministry of Education, Government of India. (2020). *National Education Policy 2020* [English version]. https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf
5. GetMyUni. (2020). *New National Education Policy: An overview*. https://www.getmyuni.com/articles/new-national-education-policy
6. Ministry of Education, Government of India. (2020). *National Education Policy 2020* [English version]. https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf
7. Krishna, A. (2020, July 29). NEP 2020 highlights: School and higher education. *NDTV*. https://www.ndtv.com/education/nep-2020-highlights-school-higher-education
8. Naidu, M. V. (2020, August 8). The New Education Policy 2020 is set to be a landmark in India's history of education. *Times of India Blog*. https://timesofindia.indiatimes.com/blogs/toi-edit-page/the-new-education-policy-2020-is-set-to-be-a-landmark-in-indias-history-of-education/
9. Chopra, R. (2020, August 2). Explained: Reading the new National Education Policy 2020. *The Indian Express*. https://indianexpress.com/article/explained/national-education-policy-nep-2020-schools-colleges-6531603/

PROSPECTS AND CHALLENGES OF NATIONAL EDUCATION POLICY 2020 ON ACADEMIC LANDSCAPE

Somkuwar Subhash R.[1] and J. V. Gadpayale*[2]

[1]Department of Botany,

Dr. Ambedkar College, Deekshabhoomi, Nagpur (MS), India.

[2] Department of Botany,

S. N. Mor College of Arts, Commerce & Smt. G. D. Saraf Science College, Tumsar, India.

*Corresponding author E-mail: jvgadpayale@gmail.com

Abstract:

This article provides a thorough analysis of India's National Education Policy (NEP) 2020, assessing its capacity to fulfill the UN Sustainable Development Goal 4 (SDG 4) regarding Quality Education. It sheds light on the historical background of India's education system, addressing the obstacles related to accessibility, equality, and memorization-based learning. The provisions of NEP 2020 are further examined in the paper, with a focus on aligning them with the five SDG 4 targets: universal access, equity, foundational literacy and numeracy, competency-based learning, and lifelong learning opportunities for all. The paper also delves into the policy's emphasis on critical thinking, problem-solving, and vocational training, analyzing how these aspects contribute to promoting sustainable economic growth, decent work, and gender equality. Additionally, limitations within NEP 2020 itself are explored, including potential overemphasis on foundational skills at the expense of higher-order thinking and the limitations of standardized assessments. Furthermore, the NEP 2020 is also analyzed for its constraints, such as the possible focus on basic skills over critical thinking, limitations and the constraints for standardized evaluations for inclusive and sustainable future of Indian citizens.

Introduction:

During ancient time India (i.e.: Bharat) has the Glorified Education System in the form of world class universities such as Nalanda, the Takshashila, the Vikramshila, the Valabhi, the Somapura, the Jagadala etc. Sad to mention that nowadays there is not even a single university located in India which falls into top 100 universities of world. In 1835 Britishers introduced the English Education Act, 1835 after Macaulay's Minute submitted to the council and approved by Lord Bentik. That education system was introduced to manufacture 'Machine Man', who will work as instructed, where creativity didn't find any place. Sadly, that subtle desire to manufacture 'Machine Man' continued to exist in our education system even after independence of Republic India, where new ideas and imaginations of students found no validation or comparatively less scopes-where the educational authorities use to provide long list of rules and

the teachers played the role of the executors to a great extent. The NEP is a luminous hope to flash out bundles of defaults from our ongoing educational system. The Indian constitution outlines a guideline in Article 45 of the Directive Principle of State Policy (DPSP) that emphasizes the importance of equal access to education for all. As Education falls under the Concurrent List, it is the responsibility of both the state and central governments to ensure this provision is upheld. While the state must adhere to the instructions given by the center, compliance with these instructions is not mandatory.

In January of 2015, a committee led by former Cabinet Secretary T. S. R. Subramanian initiated the consultation process for the New Education Policy. Following the committee's report, the draft NEP was presented in 2019 by a team headed by former Indian Space Research Organization (ISRO) chief K. Kasturirangan in June 2017. The Draft New Education Policy (DNEP) 2019 was subsequently unveiled by the Ministry of Human Resource Development, after which a series of public consultations took place. The Draft NEP consisted of 484 pages. The vision of the National Education Policy is: *National Education Policy 2020 envisions an India-centric education system that contributes directly to transforming our nation sustainably into an equitable and vibrant knowledge society by providing high-quality education to all."*

The NEP has a primary goal of providing universal education from primary school through the higher secondary level by 2030. Additionally, it aims to reintegrate students who have discontinued their education back into the system. This is achieved through a curriculum structured in 5+3+3+4 terms, which encompasses twelve years of schooling and three years in Anganwadi. Emphasis is placed on foundational education and numeracy skills. The gap between academic curriculum and extracurricular activities has significantly diminished. Vocational courses are set to commence from the 6th grade onwards. Emphasis is placed on teaching the mother tongue up to grade 5. The student's development is monitored in a more holistic manner with thorough analysis compared to the conventional evaluation methods. By 2035, it is anticipated that the Gross Enrollment Ratio in higher education will increase by approximately 50%. This growth is attributed to the implementation of the NEP, which offers a wide range of flexible subjects for students. The policy also introduces a mechanism that allows for multiple entry and exit points, along with appropriate certification and credit transfer facilities. To enhance research endeavors, the National Research Foundation will be established, leading to a reformation of the research platform. Furthermore, the Higher Education authority will receive support through the establishment of four distinct wings, each assigned with specific functions to ensure effective monitoring. Autonomous colleges are set to receive increased autonomy as information technology is integrated across their systems. The NEP also encompasses strategies to allocate funds based on gender and establish special education zones

to promote accessibility in remote areas. National education forums have been established to facilitate discussions on the integration of technology.

Many educationists have criticized the policy and termed it as casteist. Among other reasons, critics have pointed out that the policy does not mention reservation for historically marginalized communities even once. The NEP does not advocate any type of graduation or training for a vocational trainer. The vocational trainer will be from the villages, from the community. The parents and grandparents of the Bahujan classes are agricultural labourers, and these are the local factors, so you'll be picking up children for agricultural labour activities or agriculture allied labour activities. This is bound to drastically increase dropout rates (Ezhilan Naganathan and Abhay Regi, 2020). The NEP is tailored to favor a neo-colonial economic order. It will favour those from affluent backgrounds, and discriminate against the poor and the oppressed. The fact is we have squandered away the opportunity to build a modern Indian state. It is for the hard working "Bahujan" population to struggle and preserve the realm of constitutional rights in an increasingly corporate controlled India. This calls for political consciousness; opposition to the NEP can be the basis for building this much needed political consciousness. (Prem Singh 2020). In essence, the present article delineates the myriad ways through which the NEP 2020 contributes to the processes of social reproduction, particularly the mechanisms through which it conduces to the hegemony of historically privileged caste groups in the society (Singh, Y. 2023).

The NEP disregards to acknowledge the deep-rooted socio-economic disparities based on caste, class, and religion. Additionally, it overlooks the disparities between rural and urban areas, as well as the unequal outcomes resulting from these differences. This educational policy exposes students to a competitive atmosphere that primarily benefits those who are already privileged and have access to resources. Deceptively, the NEP highlights the importance of vocational education, aiming to incorporate vocational training into the education system. It proposes that students from the sixth grade onwards should acquire skills such as plumbing, carpentry, pottery, and more, in order to create a more inclusive and comprehensive educational experience. However, NEP overlook to consider the fact that the aforementioned professions in a diverse hierarchical nation like India are customary jobs for individuals belonging to the lower caste strata. These occupations have traditionally been carried out by marginalized individuals who were deprived of education within the Manuwadi system. The introduction of these professions by the NEP appears to reintroduce a similar Manuwadi system within the education system, where the rural poor and backward castes will be forced back into these occupations if they do not excel academically. Meanwhile, private schools, which are predominantly attended by individuals from upper castes and higher social classes, will face minimal obstacles. Due to this outcome, and also because of the implementation of various board exams designed to assess

students at every stage, individuals from marginalized backgrounds would be obligated to pursue vocational occupations, thus distancing themselves even more from education. Taking a broader perspective, this will only serve to widen the gap between different castes and classes, exacerbating existing inequalities.

Those individuals who possess the necessary resources and opportunities, specifically those belonging to the upper caste or class, tend to select fields such as STEM, while marginalized students are often discouraged from pursuing education. Consequently, by upholding this system, the NEP inadvertently contributes to the perpetuation of the caste system instead of eliminating it. The NEP's intentions align with the aspirations of the caste system itself, aiming to transform education into a privilege exclusively reserved for the upper caste and class. This, in turn, establishes a self-serving and detrimental cycle. The New Education Policy (NEP) barely offers practical solutions to the existing issues in the education sector. Instead, it presents unrealistic and unattainable claims that not only seem idealistic but also promote discrimination and serve a specific ideological agenda. Upon closer examination, it becomes evident that the NEP favors the privileged and affluent, while neglecting the needs of the underprivileged and marginalized. Rather than addressing discrimination, it perpetuates it. Consequently, the current form of the NEP appears more like a New Discrimination Policy rather than a New Education Policy, unless the Government intends to rectify its shortcomings (Anandi Pandey and Rohit Rajak, 202**1**).

It underscores the need for effective implementation strategies to overcome challenges and harness the policy's transformative power for a more sustainable and equitable future (Siddharth Shankar Kanungo, 2024**)** for all including underrepresented reserved and backward (OBC-SC-ST) classes students. The NEP 2020 does not address the presence of graded hierarchies in school education or the Common School System. While the policy emphasizes affordable education, it fails to mention the Right to Education for all, continuous financial support for autonomous and deemed HEI/Universities, provision for surplus teaching and nonteaching staff, as well as fellowship, scholarship, and freeship for reserved and backward (OBC-SC-ST) classes students. The new education policy should ensure that all students, regardless of their location, have access to a high-quality education system, with a specific emphasis on historically, underrepresented marginalized and disadvantaged groups. The proposal lacks evidence or case studies to support the merging of schools, particularly in terms of how it may impact the education of marginalized OBC-SC-ST groups. What are the consequences of shutting down a government school? Could this result in private schools taking over the vacant spaces? Another concern is the implementation of centralized exams for admissions at various educational levels, which may further widen the gap and benefit coaching centers.

It took a generation of 70 years for school education to get to the point of Right to Education Act, 2009. NEP 2020 has diluted many features of the Right to Education Act school education and introduced reforms that are primarily market driven, the ground demands being quite different. At the end of the day, we are not getting any closer to a Common School System of school education. Unless all schools are the same, full participation in the democratic processes of the Country and elevated jobs in the labor market will be a distant dream for Majorities (Bahujan-OBC-SC-ST-CM) (Naaz Khair, 2020).

The policy recommendations will lead to acute commercialization and centralization. Both at the level of school education and high education, the curriculum framework and coursework are being dictated centrally, barely giving any right to states to determine their education policy. Centralized entrance exams are yet another controlling point both in terms of syllabi and stratification. In a very systematic way, the course work for public funded schools and universities is being diluted and students time is being fragmented into meaningless smaller modules in the name of Skill and Value Addition which would leads to strengthen caste based system and works as like earlier times before the constitution of republic India. The National Education Policy 2020, unfortunately, does not seem to even acknowledge what the constitution mandates and safeguards for all its children. After all, the oxymoron is a part and parcel of politics.

Research Methodology:

This study is a descriptive research endeavor. The essential secondary data was gathered from diverse websites, encompassing the Government of India's official site, magazines, journals, and other publications. Subsequently, this data underwent thorough analysis and review to derive meaningful inferences and draw conclusive findings.

Evolution of National Policies of Education in India:

India’s first national policy on education or the NPE was formulated in 1968 following the Kothari Commission’s report (Haragopal, 2020). The Commission mentioned the need for a common school system (Bhatty, 2014), or a universal education system, in which equitable quality education is provided to all children irrespective of their backgrounds. However, the NPE failed to coordinate this resolve with sufficient financing, governance structures and strategic plans for implementation (Haragopal, 2020). In 1986, the most prominent and substantial NPE came into existence following a troubling report submitted to the GOI (Little, 2010). The report indicated that while access to education had improved, teaching and learning conditions, as well as learning outcomes remained a staggering concern. The NPE of 1986 established the central government as the key player in developing and implementing policy measures (Chatterjee, Li, and Robitaille, 2018). However, the policy also underlined the importance of decentralized governance characterized by greater community involvement in school education (Govinda and

Bandyopadhyay, 2006). In this sense, decentralized governance involves District Education Boards, local village bodies like the Panchayat, and the state governments to participate in the planning, coordination, monitoring and evaluation of educational development and school improvement (Dhar, 1997).

Through an examination of India's recent NEP 2020, we aim to explore how the policy integrates concepts of inclusivity and fairness in the pursuit of providing high-quality education to every child in the country. We have endeavored to compare the key successes and shortcomings of the policy, while also proposing solutions to address certain obstacles. Presently, approximately 260 million children in India are enrolled in primary and secondary school education (MHRD 2018). The magnitude of the education system in India and the persistent socio-economic disparities highlight the intricate obstacles it still confronts in ensuring the provision of quality education (Singal 2019). Despite achieving almost full school enrollment at the primary education stage (grades 1–6), enrollment rates gradually decline, indicating a significant dropout rate, especially among disadvantaged students. For example, enrollment rates for students with disabilities decrease from 0.91% to 0.32% from primary to higher secondary levels, for Muslim students from 15.64% to 10.46%, for SC (Scheduled Castes) students from 19.4% to 17.45%, and for ST (Scheduled Tribes) students from 10.37% to 7.4% (Government of India 2021; UNESCO Institute of Statistics, 2023).

In 2018, ASER reported that only 73% of grade 8 students could read a grade 2 level text and only 44% could solve a 3-digit by 1-digit numerical division (Rangarajan *et al*. 2023). More recently, NAS scores indicate a national average of 326 on 500 for language at the grade 3 level, and 320 at the grade 8 level, with 305 on 500 for mathematics at the grade 3, and 260 at the grade 8, levels (NAS, 2021). These scores, on the language test, are significantly lower at the grade 3 level for SC (315) and ST (317) students, as well as on the mathematics test for SC (249) and ST (244) students (NAS, 2021). Similarly, lower scores have been indicated at the grade 8 level for SC (296) and ST (291) students on the language test, and on the mathematics test (SC students' score: 249; ST students' score: 244) (NAS, 2021).

Features of NEP Related to Higher Education:

The new higher education regulatory system will ensure that separate, autonomous, and empowered bodies perform distinct administrative, accreditation, financing, and academic standard-setting roles. These four structures will be established as independent verticals within a single umbrella institution, India's Higher Education Commission (HECI). Various reforms and new developments have been introduced by NEP in the higher education sector. Some of the notable features are:

- **Single Regulatory Body for Higher Education:** The objective of the NEP is to establish the Higher Education Commission of India, which will serve as the single regulatory authority for all fields of education, with the exception of legal and medical education.
- **Multiple Entry and Exit Programme:** Multiple entry and exit options will be available for students who wish to discontinue the course midway. Their credits shall be seamlessly transferred via the Academic Bank of Credits.
- **Tech- Based Option for Adult Learning Through Apps, TV Channels:** Different options for adult learning, including apps, online courses/modules, satellite-based TV channels, online books, and ICT-equipped libraries and Adult Education Centers, will be created to ensure technology based learning experiences.
- **E-courses to be Available in Regional Languages:** Technology is set to play a crucial role in education, encompassing planning, teaching, learning, assessment, as well as training for teachers, schools, and students. E-content will be made accessible in regional languages, with a focus on 8 Indian languages such as Kannada, Odia, and Bengali, in addition to the existing e-courses offered in Hindi and English.
- **Foreign Universities to Set-Up Campuses in India:** The new legislation will allow the top 100 foreign universities in the world to establish operations in India. As outlined in the document from the Ministry of Human Resource Development, these universities will receive exemptions in terms of regulations, governance, and academic standards, similar to other autonomous institutions in the country.
- **Common Entrance Exam for All Colleges:** The National Testing Agency (NTA) will conduct a standardized entrance exam for all higher education institutions.

Challenges and Prospects:

Although the NEP is nascent and yet to be supported with an implementation plan, it has attracted considerable scrutiny from a few policy researchers in India. The policy is welcomed for including pre-primary education under universal access to quality education, referencing the Rights of Persons with Disabilities Act, and focusing on teacher education and professional development. Kumar, Prakash and Singh have called the policy a comprehensive framework that will require ‘a structural overhaul in the Indian education system. They highlight challenges they believe to be a key barrier in achieving the ideas set forth in the new policy. These challenges range from inadequate expenditure on education, burgeoning of sub-par private institutions, poor governance structures to inadequate leveraging of information and communication technologies (Kumar, Prakash, and Singh 2020).

The NEP has been called as being ‘too elusive for an internal scrutiny’ and a political manoeuvre that disregards existing systems and processes (Menon, 2020). For instance, the NEP talks about creating a new national curriculum framework while the existing one is far from

being implemented across schools. Scholars also ascertain that the NEP is grounded in a human capital approach and discounts social justice concerns (Batra, 2020 and Haragopal, 2020). Indeed, Batra (2020) and Govinda (2020) highlight the NEP's silence on the RTE Act that legally supports inclusion in schools, thereby presenting an uncoordinated understanding of inclusive education and school improvement for marginalized learners. Additionally, it has been argued that the NEP further obscures principles of social justice by arbitrarily classifying constitutionally recognizedmarginalized groups into one category and setting up 'Special Educational Zones' for the marginalized (Batra, 2020). This is further elaborated in the Findings and Discussion section. Considering these recently welcomed ideas and some critical issues raised by policy researchers from India, we have attempted to analyze the NEP in a more comprehensive manner by adapting Tiklyand Barrett's (2011 and 2012**)** Context Led Model of Education Quality.

i) Challenge for the Parents of the Students: The parents lack any understanding of the national education policy. Despite its significant importance, the parents struggle to formulate a coherent set of ideas about the national education policy. This difficulty extends to the field of management education as well. It distinctly distinguishes the generation X from the generation Y and the future generations. In the current context of the Covid-19 pandemic, parents are completely unaware of the online education system that is currently being implemented, which is distressing. The national education policy of 2020 has become a daunting challenge for parents in terms of their children's education **(**Shukla, 2020**).**

ii) Grading System: Grading students based on the curriculum has become a challenging task. With a wide range of fields available for students to choose from, faculty members find it difficult to assign grades based on their electives. In a Management institution, students have the opportunity to select various features from the market's prospectus, allowing them to add numerous electives to their existing courses. This diversity in electives poses a challenge in maintaining a uniform grading pattern across different disciplines. Consequently, it becomes challenging to establish equal grading patterns with respect to all the students **(**Upadhyay, 2020).

iii) Challenges in Recruitments: The traditional educational pattern served as the foundation for education in the past, but the current national education policy of 2020 has brought about a significant shift in not only the schooling system but also in undergraduate and postgraduate courses. As a result, both private and government companies must adapt their recruitment policies to align with the new education policy. This task is challenging, as they must identify individuals with the appropriate qualifications to meet the job requirements. Therefore, it is imperative for both private and government recruiters to thoroughly analyze the national education policy to develop the necessary recruitment strategies.

iv) Challenges in Flexibility with Respect to the National Education Policy: This challenge lies in the adaptability to the national education policy. While students already have a flexible curriculum, they have never experienced such flexibility in the past. Consequently, there is a lack of guidance for all students, especially those from rural backgrounds. Specifically, individuals from rural areas find it particularly challenging to comprehend the flexibility of the national education policy. Furthermore, they are unaware of the benefits of credit courses and how they can contribute to their pursuit of a degree, bridge course, or post-graduation. In terms of management courses, students are apprehensive about the alignment between the flexible syllabus and the current market demands. They are deeply concerned about the market's expectations. The existing market is still rooted in traditional courses, while the current educational landscape has undergone significant changes.

Relevance:

Relevance is concerned with the elements of learning outcomes that are relevant to the socio-economic context, human developmental needs and meaningful for different socio-cultural groups. The goals of education must be to enhance all learners' capabilities to lead sustainable livelihoods in diverse local environments, as well as benefit from a globalizing world. Education must develop capabilities such as, concern for the natural environment, knowledge of histories and languages of indigenous communities enable critical thinking, world citizenship and imaginative understanding.NEP 2020 equates Indian education system with the education system that produced great scholars like *Aryabhata, Varahamihira, Bhaskaracharya, Brahmagupta, Chanakya, ChakrapaniDatta, Madhava, Panini, Patanjali, Pingala, Sankardev, Maitreyi, Gargi* etc. It is not surprising that, perhaps, all of these scholars mentioned in NEP 2020 belong to the upper caste because for thousands of years Education was denied to Bahujan. It is only due to the work of Bahujan educationists like*Mahatma Budha, SantBasaveshwar, SantNamdeoMaharaj, SantTukarmMaharaj, SantJagnaleMaharaj, SamratShivaji, Mahatma Phule, SavitribaiPhule, ShahujiMaharaj, Periyar, Dr. Ambedhkar* and Constitutional provisions since Independence that Bahujan are able to educate themselves. NEP 2020 has failed to recognize the contributions of Bahujan educationists.

Participation:

Participation underpins inclusion and relevance and deals with educational goal setting and decision-making processes at the micro-, meso- and macro-levels. At the classroom level, it is about the control that learners have over their lessons and classroom practices. At the school level, it considers the structures of governance, the involvement of learners in the governance processes, and the nature of the relationship between the school and the community. At the national level, participation determines the presence of informed public debate and advocacy regarding educational policies. Indeed, it becomes imperative to reflect on the kinds of

accountability processes that are in place and whether they are multidirectional and include multiple voices.

In the name of restructuring and new content creation, the current government is pushing its agenda of saffronisation. Workshops on Indian Knowledge System conducted by the UGC and Universities unmask the intent of converting public funded universities into political organization recruiting zones. Pracharaks are being invited to deliver talks which are extremely unscientific and against the Constitution's assertion that all are equal. Same is the situation with funding of research. Decay of public funded modern institutions of learning into Gaushalas is worrisome (https://cpim.org/nep-2020-against-constitutional-framework/ NEP 2020: Against the Constitutional Framework, August, 2023).

Conclusion:

The National Education Policy 2020 is a comprehensive document that promises major reforms in higher education in India. The policy recognizes the importance of multidisciplinary education, research, vocational education, teacher education, and the use of technology in higher education. The policy aims to make India a hub for research and development, attract talent from around the world, and prepare students for the changing job market. The implementation of the NEP 2020 will require coordinated efforts from all stakeholders, and it remains to be seen how effectively the policy will be implemented. However, the NEP 2020 is a step in the right direction towards transforming India's education system to meet the demands of the changing world.

NEP 2020 states that 'knowledge of India' will be offered as an elective subject in secondary school. Appears from NEP 2020 that it will include study of Sanskrit and Tribal knowledge systems. It is, however, not clear from NEP 2020 whether the proposed subject, 'Knowledge of India' will include the study of Pali and Prakrit knowledge systems as well, which inspire large sections of Bahujan. "Doing what's right" is another important area of leaning identified in NEP 2020. However, NEP 2020 does not identify 'annihilation of Caste' as one of the many themes that this area of learning will cover (Naaz Khair, 2020). NEP 2020 states, once internet-connected smart phones or tablets are available in all homes and/or schools digital pedagogy will be used thereby enriching the teaching-learning process with online resources and collaborations. There is no frame given in NEP 2020 by when this will happen. Well known private schools already have smart classrooms, and children from affluent families are already using online educational apps. According to a statement made by a UNESCO envoy, Forest Whitaker, in 2017, in the developing world, less than 35% people use the internet; the remaining 65% are often poor and remote communities or disenfranchised groups. An analysis shows, within developed economies, 90% of jobs require some level of digital skills. According to a UNICEF report released in 2017, only 26.42% of India's schools have computers. Pratham's

ASER report of 2017 found 63.7% of the rural youth (age group 14-18 years) surveyed had never used the internet (Naaz Khair, 2020).

The policy makes bold and progressive statements towards the transformation of the current system of education in India. However, it also presents pitfalls that undermine the social justice concerns of education. In particular, the policy falls short in three critical broad areas:

1. An ambiguous understanding of inclusive education and failure to connect already existing frameworks on inclusion, such as the RTE Act
2. Failure to fully recognizemarginalized children and the barriers they face to access meaningful school education, as well as propose clear guidelines to tackle structural inequalities, and
3. A narrow understanding of learners' and their families' participation in the education system, with the need to include their multiple voices in diverse ways.

The policy document is written with the aim of creating confusion and illusions – while it recognizes several shortcomings of the current educational systems, the recommendations lack the intent to address the issues and will actually deepen existing inequalities. Future research, examining specific school processes will offer insight into how schools and communities engage with the policy, the challenges they continue to face and policy revisions that could further enhance the quality of school education. The effectiveness and success of NEP-2020 is depended upon the entire educational journey, from primary schooling to post-doctoral research studies and vocational training courses. This comprehensive policy empowers educational institutions, including schools, colleges, and universities, to conduct self-evaluations. By doing so, it aims to address existing inequalities and pedagogical issues within the educational framework. Unscientific disciplines like Indian Astrology, Vedic literature, Vedic mathematicsetc., which lack scientific and historical evidence, have been incorporated into the Indian knowledge system guide. This inclusion undermines the scientific mindset and contravenes Article 51 A (h) of the Indian constitution. Despite the policy's significant competitive and contradictory elements, the practical implementation poses a greater challenge for academics. The successful execution requires the cooperation of educational establishments and the backing of all states in order to navigate the evolving and challenging policy environment. The supreme jurisdiction of the National Higher Education Regulatory Council across the nation diminishes the autonomy of states and their respective education councils. Moreover, the implementation of the policy heavily depends on government funding, which is considerably lower when compared to education system of developed countries, posing yet another substantial obstacle to overcome.

References:

1. Pandey, A., & Rajak, R. (2021). NEP: New education policy or new discrimination policy? *The Feminist Collective*.

https://thefeministcollectiveashokau.wordpress.com/2021/02/06/nep-a-new-education-or-new-discrimination-policy/

2. Batra, P. (2020). NEP 2020: Undermining the constitutional education agenda? *Social Change, 50*(4), 594–598. https://doi.org/10.1177/0049085720958809
3. Bhatty, K. (2014). Review of elementary education policy in India: Has it upheld the constitutional objective of equality? *Economic and Political Weekly, 49*(43/44), 100–107. https://www.jstor.org/stable/24480999
4. Chatterjee, I., Li, I., & Robitaille, M. C. (2018). An overview of India's primary school education policies and outcomes 2005-2011. *World Development, 106*, 99–110. https://doi.org/10.1016/j.worlddev.2018.01.016
5. Kothari, D. S. (1966). *Report of the Education Commission (1964-66)*. Retrieved from https://archive.org/stream/ReportOfTheEducationCommission1964-66D.S.KothariReport/48.Jp-ReportOfTheEducationCommission1964-66d.s.kothari_djvu.txt
6. Dhar, N. T. (1997). Decentralized management of elementary education: The Indian experience. In R. Govinda (Ed.), *Decentralization of educational management: Experiences from South Asia* (pp. 107–132). Paris: UNESCO.
7. Naganathan, E., & Regi, A. (2020). *National education policy: Casteist, self-defeatist centre should learn from Tamil Nadu*. *The Caravan Magazine*. https://caravanmagazine.in/news/national-education-policy-casteist-self-defeatist-centre-should-learn-from-tamil-nadu
8. Government of India (GOI). (2021). *Report on Unified District Information System for Education Plus (UDISE+) 2020-2021*. https://udiseplus.gov.in/#/page/publications
9. Govinda, R., & Bandyopadhyay, M. (2006). Decentralization of educational governance in India: Trends and issues. In C. Bjork (Ed.), *Educational decentralization. Education in the Asia-Pacific region: Issues, concerns and prospects* (pp. 159–176). Dordrecht: Springer. https://doi.org/10.1007/978-1-4020-4358-1_11
10. Govinda, R. (2020). NEP 2020: A critical examination. *Social Change, 50*(4), 603–607. https://doi.org/10.1177/0049085720958804
11. Haragopal, G. (2020). National education policy 2020: Implications and impact. *Social Change, 50*(4), 589–593. https://doi.org/10.1177/0049085720965514
12. Communist Party of India (Marxist). (2023). NEP 2020: Against the constitutional framework. Retrieved from https://cpim.org/nep-2020-against-constitutional-framework/NEP2020:Against%20the%20Constitutional%20Framework

13. Kumar, K., Prakash, A., & Singh, K. (2020). How national education policy 2020 can be a lodestar to transform future generations in India. *Journal of Public Affairs*, *21*(3), 1–5. https://doi.org/10.1002/pa.2500
14. Little, W. A. (2010). *Access to elementary education in India: Politics, policies, and progress*. Consortium for Research on Educational Access, Transitions, and Equity. London: Institute of Education, University of London.
15. Menon, S. (2020). NEP 2020: Some searching questions. *Social Change*, *50*(4), 599–602. https://doi.org/10.1177/0049085720958811
16. Ministry of Human Resource Development (MHRD). (2018). *Educational statistics at a glance*. Department of School Education and Literacy, New Delhi: Statistics Division.
17. Khair, N. (2020). The journey of school education for Bahujan and impact of NEP 2020. *Round Table India*. Retrieved from https://www.roundtableindia.co.in/the-journey-of-school-education-for-bahujan-and-impact-of-nep-2020/
18. National Achievement Survey (NAS). (2021). *Report Card*. Retrieved June 1, 2015, from https://nas.gov.in/report-card/nas-2021
19. National Education Policy (NEP). (2020). *National education policy*. Ministry of Human Resource Development, Government of India. Retrieved from https://www.mhrd.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf
20. Modi, N. (2020). Policy to shift focus from 'what to think' to 'how to think'. *India Today*. Retrieved from https://www.indiatoday.in/educationtoday/news/story/pm-narendra-modi-speech-live-new-education-policy-inaugural-education-conclave-1708665-2020-08-07
21. Singh, P. (2020). National education policy for the elites. *The Indian Express*. Retrieved from https://indianexpress.com/article/opinion/national-education-policy-for-the-elites-6841211/lite/
22. Rangarajan, R., Odier-Guedj, D., Grove, C., & Sharma, U. (2023). The school of our dreams': Engaging with children's experiences and hopes at a remote school in India. *Children's Geographies, 21*(4), 737–755. https://doi.org/10.1080/14733285.2022.2124101
23. Shukla, A. (2020). Govt unveils sweeping changes for education. *Hindustan Times*. Retrieved from https://www.hindustantimes.com/india-news/govt-unveils-sweeping-changes-foreducation/story-zSewHWq7IiCaOOLNXUiRcK.html
24. Kanungo, S. S. (2024). A critical analysis of India's national education policy 2020 and its alignment with the UN SDGs. *Educational Administration: Theory and Practice*, *30*(4), 791–796. https://doi.org/10.53555/kuey.v30i4.1561
25. Singal, N. (2019). Challenges and opportunities in efforts towards inclusive education: Reflections from India. *International Journal of Inclusive Education, 23*(7-8), 827–840. https://doi.org/10.1080/13603116.2019.1624845

26. Singh, Y. (2023). The exclusion of Bahujan schoolchildren: An anti-caste critique of the national education policy 2020, India. *CASTE: A Global Journal on Social Exclusion, 4*(1), 54–74. https://doi.org/10.26812/caste.v4i1.411
27. Tikly, L., & Barrett, A. M. (2012). Education quality and social justice in the Global South: Towards a conceptual framework. In L. Tikly & A. M. Barrett (Eds.), *Education quality and social justice in the Global South: Challenges for policy, practice, and research* (pp. 1–18). Oxon: Routledge.
28. Tikly, L. (2011). Towards a framework for researching the quality of education in low-income countries. *Comparative Education, 47*(1), 1–23. https://doi.org/10.1080/03050068.2011.541671
29. UGC asks varsities to create awareness about new education policy among students, teachers. (2020). *Hindustan Times*. Retrieved from https://www.hindustantimes.com/education/ugc-ask-varsities-to-create-awareness-about-new-education-policy-among-students-teachers/story-XjDXDw978SXD0VUPUmxhvL.html
30. UNESCO Institute of Statistics (UIS). (2023). Sustainable development goals: Other policy relevant indicators. Retrieved June 1, 2023, from http://data.uis.unesco.org/index.aspx?queryid=3813
31. Upadhyay, D. (2020). New school education policy approved: Grading system, more choice of subjects. *Livemint*. Retrieved from https://www.livemint.com/education/news/new-school-education-policy-grading-system-more-choice-of-subjects-11596001769379.html

ROLE OF WOMEN IN THE FIELD OF KNOWLEDGE MANAGEMENT

Muktak Vyas

Poornima University, Jaipur

Corresponding author E-mail: muktak.vyas@poornima.edu.in

Abstract:

In today's rapidly evolving knowledge-based economy, the effective management of knowledge assets is paramount for organizational success. While knowledge management (KM) has traditionally been a male-dominated field, there is a growing recognition of the invaluable contributions that women bring to this discipline. This paper explores the unique perspectives, skills, and experiences that women bring to knowledge management initiatives and argues for the importance of gender diversity in fostering innovation and resilience within organizations. Drawing on empirical research and case studies, it examines how women's collaborative tendencies, empathetic communication styles, and holistic problem-solving approaches enhance knowledge creation, sharing, and utilization processes. Furthermore, the paper discusses the barriers and challenges that women may encounter in advancing their careers in knowledge management and proposes strategies for promoting gender equality and inclusivity within KM practices. Ultimately, by harnessing the full potential of women in knowledge management, organizations can cultivate a culture of creativity, adaptability, and competitive advantage in the knowledge economy of the 21st century.

Keywords: Women, Knowledge Management, Gender Diversity, Organizational Learning, Leadership, Knowledge Sharing

Introduction:

In the dynamic landscape of knowledge management, the role of women has been increasingly recognized and celebrated for their invaluable contributions. As organizations strive to harness the power of information and expertise, women have emerged as key drivers in shaping knowledge strategies, fostering collaboration, and driving innovation. This introduction sets the stage for exploring the significant role of women in knowledge management. It delves into the unique perspectives, leadership styles, and capabilities that women bring to this field, enriching its practices and outcomes. Through a lens of diversity and inclusion, we examine how women's participation in knowledge management not only enhances organizational performance but also fosters a culture of equality and empowerment

From pioneering research to practical implementation, women in knowledge management play multifaceted roles, from knowledge architects and facilitators to change agents and mentors. Their experiences, insights, and achievements serve as inspiration for aspiring professionals and as a catalyst for advancing the discipline. In this exploration of women in knowledge

management, we uncover the triumphs, challenges, and opportunities they encounter in their journey towards driving organizational success through effective knowledge utilization and collaboration. Through highlighting their stories and accomplishments, we aim to elevate the visibility of women in this vital domain and promote greater recognition of their indispensable contributions.

Review of Literature:

Ms. Sweety Gupta and Ms Aanchal Aggarawal (2020) analysed that women entrepreneurs are not the women who works only for themselves but working for their own and for themselves they actually create employment opportunities for the other women by establishing and enterprise. This paper focuses mainly on the constraining factors and major factors which affects the development and performance of the women entrepreneurs and several measures which can be taken to improve the women entrepreneurship in India. Constraining factors are the major issues which becomes the main hindrance in the path of women entrepreneurship. Women entrepreneurs faces lots of challenges for which certain, measures are examined here like, several program should be conducted to motivate women entrepreneurs and at the same time to improve the mind set of society, programs can be conducted wherein presently successful women entrepreneurs can show the path to new women entrepreneurs, government should also setup certain policies for women. Entrepreneurship opportunities, designing a curriculum for women entrepreneurship promotion, vocational training, practical marketing skills should impart, basic education facilities, advisory committee can be setup wherein successful entrepreneurs can be a part of this committee and they can further advice the new women entrepreneurs.

Khakpour Abbas (2021), the author revealed that Knowledge Management improves the effectiveness and efficiency of educational Organization. It is intellectual asset for better understanding of the effective management of the Knowledge. It is a systematic thinking with flexibility in decision, promotion in teaching and learning process, communication network, knowledgeable individual which lead to improvement in quality and quantity of research study. It also contains extensive action agendas for transforming KM from theory into practical competitive advantage. Innovative business strategies can help in achieving new landmarks and how the employees of an organization can turn into a knowledge force to churn out profit and to achieve success. For every manager and strategist concerned with generating organizational knowledge and using it more effectively. Knowledge Management enables actively transformational change in the society.

Statement of Problem:

Women are underrepresented in the field of knowledge management, posing a significant challenge to achieving diversity and inclusivity within this domain. Despite advancements in

gender equality efforts in various sectors, knowledge management continues to face a gender disparity, which impacts innovation, decision-making processes, and organizational performance. The lack of female representation not only limits diverse perspectives but also hinders the development of comprehensive knowledge strategies that cater to the needs of diverse stakeholders. This disparity in gender representation raises critical questions about the underlying factors contributing to the imbalance and necessitates exploration into potential solutions to promote greater gender equity and inclusion in knowledge management.

Objectives of Study:

- To study the strategic importance of Knowledge Management.
- To study the importance of Knowledge Management for direct & effective management development.
- To study the areas of Knowledge Management on the strengthening of employee's relationship with the management.

Research Methodology

Research Methodology is a systematic way to solve the research problem. Research methodology and techniques presents a brief overview of the research problem or idea. It is a scientific and formal study of the research problem with logic behind them. Researcher need to know how to develop a research plan, use various research techniques, to know relevant criteria for certain techniques and procedure to certain problems.

Research Design

Research design is descriptive in nature which is used as a systematic plan or conceptual structure for the research study. Research Design provides the collection of relevant evidence of the research study with minimum bias and maximum of the reliability of data collected and analysed.

Data collection

The study relied both on primary data and secondary data.

Primary Data

A well-structured Questionnaire has been used in the study. The structured questions take a form of questionnaire where the respondents were asked to fill out a form on how they perceived the various aspects of Knowledge Management initiatives in the related areas and departments. This comprises Primary Data.

Secondary Data

The Secondary Data on the research problem have been collected from globally renowned:

- National & International Journals
- Magazines
- Websites& Internet information
- Empirical Research publications
- Published thesis

Sample Size

Due to the sample size being small there may be slight in accuracy of data that can be rectified by further study (100 respondents)

Data Analysis and Nterpretation

Table 1: The concept of knowledge management

Particulars	No of Respondents
Very familiar	45
Somewhat familiar	30
Not familiar at all	25
Total	100

Source: Primary Data

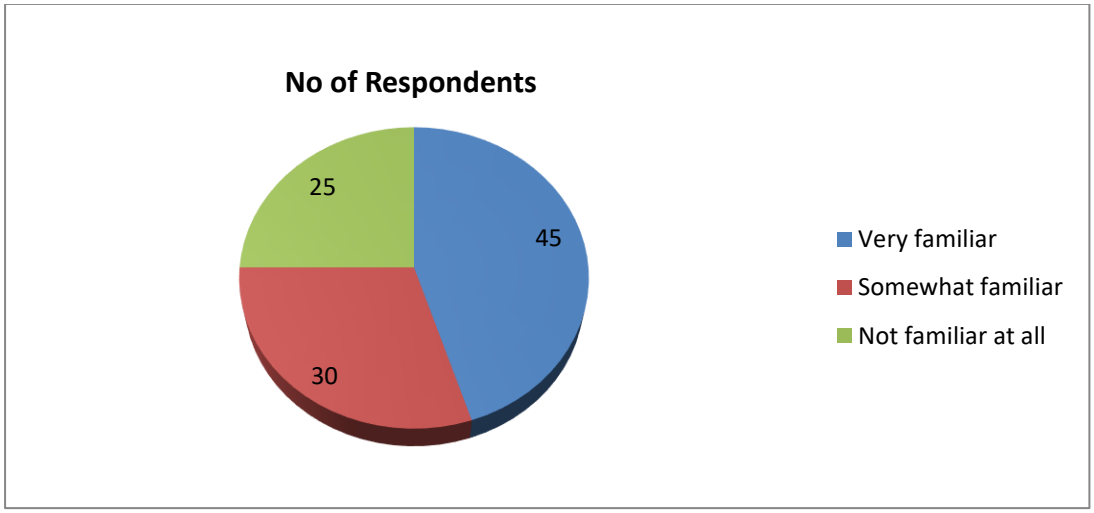

Figure 1: The concept of knowledge management

Interpretation

The table showing the majority of respondents (75%) have some level of familiarity with knowledge management, with 45% being very familiar and 30% being somewhat familiar. However, a significant portion (25%) expressed that they are not familiar with it at all; indicating potential gaps in understanding or awareness that could impact discussions or decisions related to knowledge management initiatives.

Table 2: Gender diversity plays a role in effective knowledge management

Particulars	No of Respondents
Strongly agree	35
Agree	30
Neutral	15
Disagree	10
Strongly disagree	10
Total	100

Source: Primary Data

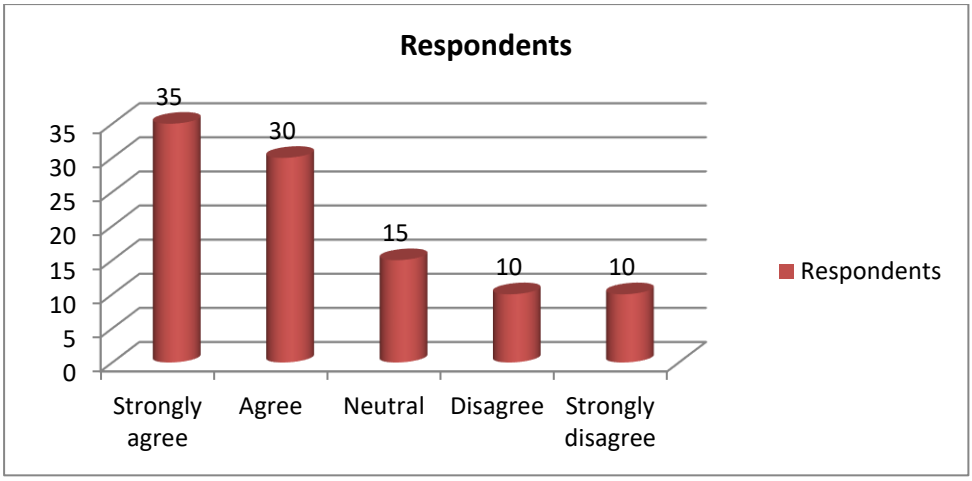

Figure 2: Gender diversity plays a role in effective knowledge management

Interpretation

The majority of respondents (Strongly agree + Agree) lean towards a positive stance on the statement. However, there is a diverse range of opinions, with a notable number of respondents expressing neutrality or disagreement.

Findings:

- Women, like any other demographic group, bring unique perspectives and experiences to knowledge management.
- Creating an environment that values and includes the contributions of women can positively impact employee engagement and retention.
- Gender diversity has been linked to increased innovation and creativity within organizations. In knowledge management, this can lead to the development of more robust and adaptable knowledge-sharing systems and strategies.

Suggestions:

- Encourage an inclusive environment where all voices, including those of women, are heard and valued. Create opportunities for women to actively participate in Knowledge Management initiatives, discussions, and decision-making processes.
- Form diverse Knowledge Management teams that include women with a range of skills, experiences, and perspectives.
- Invest in the professional development of women in Knowledge Management roles. Provide training programs and resources to enhance their skills in areas such as information management, collaboration, and knowledge sharing.

Conclusion:

The role of women in knowledge management has proven to be instrumental in fostering innovation, diversity, and effective organizational learning. As contributors and custodians of knowledge, women bring unique perspectives, problem-solving approaches, and collaborative skills that enhance the overall knowledge ecosystem. The diverse experiences and viewpoints of women contribute to a richer knowledge base, promoting a more comprehensive understanding of complex issues. Additionally, women's leadership in knowledge management often leads to inclusive and supportive organizational cultures, which in turn, facilitates better knowledge sharing and utilization. Recognizing and valuing the contributions of women in knowledge management not only aligns with principles of equality but also results in a more resilient, adaptable, and successful knowledge-driven environment. Organizations that actively promote gender diversity in knowledge management stand to benefit from the wealth of expertise and creativity those women bring to the table, ultimately leading to more robust knowledge processes and outcomes.

Recognizing and leveraging the diverse skills and perspectives that women bring to the field is essential for creating a thriving knowledge management ecosystem within any organization. Embracing gender diversity is not only a matter of inclusivity but also a strategic imperative for maximizing the potential of knowledge assets and fostering sustainable organizational growth.

References:

1. Bulmer, E., Riera, M., & Rodríguez, R. (2021). The importance of sustainable leadership amongst female managers in the Spanish logistics industry: A cultural, ethical, and legal perspective. *Sustainability, 13*(6841). https://doi.org/10.3390/su13126841
2. Chitra, A., & Kalpana, R. (2021). A study on the relationship between knowledge management and occupational stress. *Journal of Contemporary Issues in Business and Government, 27*(3), 1391-1397.

3. Compagnucci, L., & Spigarelli, F. (2020). The third mission of the university: A systematic literature review on potentials and constraints. *Technological Forecasting and Social Change, 161*, 120284. https://doi.org/10.1016/j.techfore.2020.120284
4. De La Torre, E. M., Perez-Encinas, A., & Gomez-Mediavilla, G. (2022). Fostering sustainability through mobility knowledge, skills, and attitudes. *Sustainability, 14*(1349). https://doi.org/10.3390/su14031349
5. Gopinath, R. (2020). Knowledge management practices on faculties of self-financing engineering colleges. *Journal of Emerging Technologies and Innovative Research, 6*(5), 394-399.
6. Gupta, S. (2020). A study of constraining factors and future prospects of women entrepreneurship development. *The SIJ Transaction on Industrial, Financial and Business Management (IFBM), 1*(1), 7-12.
7. Gutiérrez-Fernández, M., & Fernández-Torres, Y. (2020). Does gender diversity influence business efficiency? An analysis from the social perspective of CSR. *Sustainability, 12*(3865). https://doi.org/10.3390/su12093865
8. Khakpour, A. (2021). Public sector knowledge management: A generic framework. *Public Sector ICT Management Review, 3*(1).
9. Merma-Molina, G., Urrea-Solano, M., Baena-Morales, S., & Gavilán-Martín, D. (2022). The satisfactions, contributions, and opportunities of women academics in the framework of sustainable leadership: A case study. *Sustainability, 14*(8937). https://doi.org/10.3390/su14158937
10. Raman, R., Subramaniam, N., Nair, V. K., Shivdas, A., Achuthan, K., & Nedungadi, P. (2022). Women entrepreneurship and sustainable development: Bibliometric analysis and emerging research trends. *Sustainability, 14*(9160). https://doi.org/10.3390/su14159160
11. Sweety, G. (2020). A study of constraining factors and future prospects of women entrepreneurship development. *The SIJ Transaction on Industrial, Financial and Business Management (IFBM), 1*(1), 7-12.

STUDY ON COFFEE PREFERENCE AMONG VARIOUS GENERATIONS

Abhimanyu S Nair, Alex Thomas, Dhanush S*, Sweety Jamgade and Shashi Sharma
Faculty of Hospitality Management & Catering Technology,
Ramaiah University of Applied Science, Bangalore-560054
*Corresponding author E-mail: dhanushsubramani2020@gmail.com

Abstract:

A comprehensive study examining coffee preferences across generations revealed intriguing insights into the diverse tastes and habits of different age groups. This approach facilitated a comprehensive examination of coffee preferences, contributing valuable insights to the study of generational consumer behavior in the context of coffee consumption. From the Baby Boomers to Generation Z, distinct patterns emerged, showcasing a nuanced relationship with the beloved beverage. The objectives of the project were, to analyze types of coffee preferences by various generations in restaurants and to find preferences of various coffee brands at home. This study underscores the dynamic interplay between generational attitudes, cultural influences, and coffee consumption habits, shedding light on the evolving landscape of coffee preferences in modern society. Google Forms were circulated as part of the research methodology to gain a deeper understanding of coffee preferences across various generations. The survey questionnaire encompassed a range of inquiries, including preferred coffee types, frequency of consumption, preferred brewing methods, and factors influencing coffee choices. By leveraging Google Forms, we could easily analyze and interpret the responses, identifying trends, correlations, and differences among Baby Boomers, Generation X, Millennial, and Generation Z.

Introduction

History of Coffee

In modern-day Somalia, Ethiopia, and Yemen, centuries-old oral tradition tells of the origins of coffee. In the 15th century, people in Mecca already knew about it. Also, coffee was used as a way to focus during prayers in Yemeni Sufi monasteries in the 15th century. In the early 16th century, coffee spread to the Levant, causing some debate about whether it was halal in Ottoman and Mamluk society. Coffee was introduced to Central and Eastern Europe by the Ottomans, and it reached Italy in the second half of the 16th century via commercial Mediterranean trade routes. It had reached India and the East Indies by the middle of the 17th century. By the late 17th century, coffee houses had been established throughout Western Europe, particularly in Holland, England, and Germany. In 1720, Gabriel de Clieu brought coffee seedlings to Martinique, making it one of the earliest coffee cultivations in the New World. After that, these beans gave rise to 18,680 coffee trees, which made it possible for it to spread to

Mexico and other Caribbean islands like Saint-Domingue. By 1788, Holy person Domingue provided around 50% of the world's espresso. History of espresso (2024).

Brazil became the world's largest coffee producer in 1852 and has maintained this position ever since. The emergence of several additional major producers, including Colombia, Ivory Coast, Ethiopia, and Vietnam—the latter surpassing Colombia to become the second-largest producer in 1999—widened the playing field since 1950. Coffee has become a household item thanks to modern production methods and mass production. History of espresso. (2024)

Coffee Consumption Pattern and Trends in India

Coffee utilization in India has seen huge development and changes over the long haul. Coffee has grown in popularity since the 20th century, particularly in urban areas, where it accounts for 73% of total consumption, despite the country's long history as a tea-drinking nation. South India, particularly Tamil Nadu, leads in coffee utilization, with filter coffee being well known. Measurements from Euro screen worldwide show that Indians drank 15.6 cups of coffee per capita in 2014, expanding to 16.6 cups as of late. The ascent of bistros, especially well known among millennials, has added to this development. In the past ten years, instant coffee has become increasingly popular in the North, East, and West zones. Cafes and chain stores like Costa Coffee, Starbucks, Café Coffee Day, and Barista are evidence of the rise in coffee consumption. In 2018, the market value was estimated to be 25 billion Indian Rupees. Due to India's position as the sixth-largest coffee and milk producer in the world, consumers now have a wide range of coffee choices. Coffee marketing in India has developed, zeroing in on selling coffee as well as on giving experiences like picking beans and brewing methods. This includes things like the Fine Cup Award and the National Barista Championships. The development of coffee culture has also been aided by initiatives like The Tamara Coorg's Coffee Festival and the HORECA sector. As a result of out-of-home consumption, India's coffee consumption is anticipated to double in the next five to six years. In order to make drinking coffee a ritual that is synonymous with the brand, marketers are encouraged to establish emotional connections with customers. The evolving coffee culture in India presents valuable opportunities for further growth, both within and outside the country. (Coffee Consumption Pattern and Trends in India, 2024)

Motivation of the Study

The study is motivated by the growing coffee culture and its impact on the hospitality and catering industries. Understanding generational coffee preferences can help businesses tailor their offerings to meet diverse consumer needs.

The study aims to:

1. To understand coffee preference among various generation.
2. To analyze types of coffee preference by various generation in restaurants

3. To find preference of various coffee brands in home

Literature Review

Coffee Preferences and Brand Professor:

Satheesh Varman's (2021) scholarly article intricately explores consumer preferences in coffee brands, highlighting taste and price as the primary factors guiding choices. Through a comprehensive survey of 400 individuals, the study reveals how these two elements orchestrate brand selection, while demographic variations add layers of diversity to consumer behavior. The research maps out four key internal factors—Brand Awareness, Perceived Quality, Taste Perception, and Belongingness—that influence consumer preferences, alongside five external factors: Price, Availability, Packaging, Brand Communication, and Brand Prestige/Reputation, each playing a crucial role in shaping choices. Central to the study is the significant rise of coffee in Indian culture, traditionally dominated by tea, exemplified by the popularity of coffee chains like Cafe Coffee Day. This shift marks a cultural renaissance, with coffee emerging as a prestigious and sophisticated choice. Varman's study serves as a guide to understanding the evolving landscape of consumer preferences, shedding light on the dynamic interplay of factors that shape modern beverage culture in India.

Nescafe's advertising Strategies:

" Apurva Ashok Patel *et al.* (2017) "An Analysis of Nescafe in the United States and India," meticulously examine Nescafe's advertising strategies in these contrasting markets. The research highlights the distinct marketing approaches employed by Nescafe, emphasizing the differences and similarities in their campaigns. The study focuses on how Nescafe targets various demographics in each region, influenced by cultural contexts and consumer preferences. It notes the significant role of McCann-Erickson Advertising Agency in shaping Nescafe's brand narrative across borders. Despite these efforts, a survey conducted at California State University, San Bernardino (CSUSB) reveals that Nescafe's advertising has not resonated well with American consumers, who find the ads unattractive. The study also explores Nescafe's competition with brands like Folgers and Starbucks in the U.S., and its tailored approaches in India's diverse socio-economic landscape. The authors conclude that Nescafe faces challenges in gaining acceptance in the competitive U.S. market. They recommend enhancing advertising strategies, understanding consumer preferences better, and diversifying coffee options to improve market positioning and competitiveness.

Coffee Flavour and Market Influence:

In their comprehensive review published on July 8th, 2020, Denis Richard Seninde and Edgar Chambers delve deeply into the complex world of coffee flavor. Their scholarly study explores the significance of coffee taste in the beverage market and examines the numerous factors that influence its development. The research meticulously investigates how

environmental conditions, processing techniques, and preparation methods affect coffee flavor. By integrating sensory evaluations with detailed chemical analyses, the study reveals the intricate interplay of elements shaping flavor perception. Key findings highlight the essential role of flavor in driving coffee's widespread popularity. The authors emphasize the intricate relationship between sensory attributes and chemical compounds, showing how these are modulated by environmental and processing variables. The study calls for expanded research, particularly in instant and ready-to-drink coffee segments, to better understand how production factors influence flavor profiles. The authors advocate for collaborative efforts among industry stakeholders to ensure consistency and appeal in coffee offerings, thereby enhancing consumer satisfaction and strengthening market competitiveness.

Coffee Shop Consumption Preferences:

"Customer Preferences on Coffee Shop Consumptions: A Conceptual Model," Adrian Gautama Himawan and Raden Aswin Rahadi (2020) offer a thorough examination of the factors influencing coffee shop consumption. Through a detailed review of 23 key papers, the research dissects how taste, design, atmosphere, brand, location, and price impact consumer choices in coffee shop settings**.** The study highlights the complex interplay of these factors, with a particular focus on their effects on the growing coffee culture in Jakarta. It provides valuable insights for both coffee shop owners and consumers, aiming to enhance coffee shop experiences. The authors call for additional research to refine their conceptual model, especially regarding emerging trends like coffee lab concepts. They emphasize the need for deeper exploration into these trends to better understand and respond to evolving consumer preferences. This approach is essential for informed decision-making and further development of Indonesia's dynamic coffee culture.

Coffee Quality Markers:

In the paper by Bealu G (May 2020), the focus is on future research directions for investigating coffee quality markers through High-Performance Liquid Chromatography with Diode Array Detection (HPLC-DAD). The paper outlines a comprehensive roadmap that includes refining methods, validating protocols, and conducting thorough compound analyses. It also emphasizes the importance of sustainability considerations and understanding consumer perceptions. The study reveals that HPLC-DAD is an exceptionally powerful tool for analyzing key coffee quality markers, including caffeine, trigonelline, and nicotinic acid. Its speed, precision, and adaptability across various coffee types—green, roasted, and espresso—make it indispensable for setting industry benchmarks. The authors conclude that HPLC-DAD is highly effective for the rapid and precise assessment of six critical coffee quality markers. They also highlight the technique's versatility and its significant role in enhancing biodiversity within the coffee sector, thus reinforcing its importance for quality evaluations and industry standards.

Coffee Consumption in Tirunelveli:

The research paper titled "Consumers' Perception towards Coffee – A Study in Tirunelveli City" by S.Ebenezer (2018) investigates the evolving coffee consumption patterns and preferences in Tirunelveli, Tamil Nadu, India. It highlights how coffee, once seen as an "old-fashioned" beverage for older people, has become trendy and contemporary, with coffee houses emerging as popular social hubs. Innovations in coffee bars and a wide range of offerings have significantly contributed to this shift. The study reveals that coffee consumption has broadened beyond traditional areas and is now a fashionable choice nationwide. Coffee houses, offering services like internet access and matchmaking, enhance their role as social gathering places. Consumers are increasingly seeking upscale, complex coffee flavors both at home and in cafes, with price being a major factor. Family heads and spouses are key decision-makers for coffee purchases, influencing marketing strategies. Higher income and educational backgrounds correlate with increased coffee consumption. The study recommends promoting coffee in northern Tirunelveli, ensuring high quality, competitive pricing, and effective advertising. Educating consumers on coffee's health benefits could further boost consumption.

Generational Coffee Preferences:

The research paper "An Exploratory Study of Generational Coffee Preferences" by Lindsey Falkner (2020) examines coffee preferences across different generational cohorts, focusing on Millennials and Generation Z. Using an online survey with 252 participants from Amazon Mechanical Turk, the study aims to offer insights for marketers in the competitive coffee industry. The 23-question survey, which included 17 questions on coffee preferences and 6 on demographics, was analyzed using SPSS statistical software. Participants, aged 20 to 79 with a mean age of 39, were categorized as 5.56% Generation Z, 54.37% Millennials, 24.21% Generation X, and 15.08% Baby Boomers, and 0.79% Silent Generation. The study investigated daily and weekly coffee consumption, preferred coffee types, preparation methods, and environmental preferences. Key findings reveal significant generational differences in coffee preferences, particularly regarding premiumization, convenience, and sustainability. Millennials and Generation Z showed distinct preferences in coffee types and preparation, with sustainability being crucial. The study suggests that coffee marketers should adopt targeted strategies, focusing on sensory marketing and sustainability to attract younger consumers and remain competitive.

Coffee Consumption Habits in Poland:

The research paper titled "Consumer Choices and Habits Related to Coffee Consumption by Poles" by Sylwia Mokrysz (2016) investigates the coffee consumption behaviors, preferences, and habits of Polish consumers, addressing a gap in research by focusing on these aspects rather than health impacts or market analysis. In Poland, coffee is highly popular, with over 80% of adults consuming it regularly and 60% daily. Conducted using a Computer-Assisted Web

Interviewing (CAWI) method with 1,500 Polish adults, the study examined brewing methods, consumption locations, and influencing factors. Cluster analysis identified three main consumer groups: "Neutral coffee drinkers," "Ad hoc coffee drinkers," and "Non-specific coffee drinkers." Although not connoisseurs, Polish consumers enjoy experimenting with different types and preparation methods of coffee, favoring traditional methods while being open to new experiences. Coffee is commonly consumed at work for its stimulating effects, break opportunities, and social interaction. The Polish coffee market, valued at approximately PLN 6 billion annually, shows a trend towards coffee beans and domestic machines, with a decline in instant coffee interest, possibly due to the COVID-19 pandemic. The study highlights the importance of sensory quality, functional benefits, and cultural context in shaping preferences, offering valuable insights into Polish coffee consumption habits.

Local Coffee Shop Preferences in Indonesia:

The research paper "The Analysis of Consumer Value in Choosing Local Coffee Shops" by Iin Mayasari *et al.* (2020). investigates Indonesian consumers' preferences for local coffee shops, focusing on how various consumer values impact satisfaction and loyalty. Using the Holbrook typology, the study categorizes values into extrinsic (efficiency, service quality, play, aesthetics) and intrinsic (status, esteem, ethics, escapism) dimensions. Key findings reveal that aesthetics, escapism, esteem, and local brand preference significantly influence consumer satisfaction, which in turn affects customer loyalty. Aesthetics and escapism are crucial, highlighting the importance of the coffee shop’s visual appeal and its ability to offer a temporary escape from daily routines. Esteem, linked to the prestige of visiting specific coffee shops, and a strong preference for local brands also enhance satisfaction. The study finds that service quality is vital for satisfaction. Analyzing responses from 420 participants using partial least squares, the research supports eight out of ten hypotheses, emphasizing both extrinsic and intrinsic values in shaping consumer attitudes. The paper suggests that local coffee shop managers should improve aesthetic appeal, provide escapist experiences, and strengthen local brand identity to boost satisfaction and loyalty, offering a framework for successful business strategies in the competitive coffee shop market.

Health Benefits of Coffee:

The study investigates consumer perceptions of coffee’s health benefits, by Antonella Samoggia *et al.* (2019) their motivations for consuming it, and their willingness to pay for health-claimed coffee. Data were collected through face-to-face surveys, yielding 250 valid responses. Analysis using factor analysis and logistic regression revealed that many consumers believe in coffee's health benefits, particularly among young, employed men who know about non-espresso coffee. These individuals typically consume coffee in social settings rather than at breakfast, prefer retail purchases, and are motivated by its energizing and therapeutic effects.

Price remains important, but there's growing interest in coffee with health claims. Consumer perceptions significantly influence dietary choices, often more than knowledge alone. The rise in coffee's popularity over soft drinks is attributed to its health benefits and social aspects, with black coffee being low in calories and fostering social interaction. Coffee chains' expansion and soft drink companies' entry into the coffee market highlight coffee's appeal. Despite limited evidence of coffee's impact on psychological well-being, moderate consumption seems beneficial, with minimal adverse effects. Understanding consumer attitudes and integrating this knowledge with nutritional science can enhance dietary recommendations and promote healthier lifestyles.

Research Problem

Research Gaps

There is a need for more comprehensive insights into how different generations perceive and consume coffee. The research question here is: What are the distinct coffee preferences of various generations?

There is limited qualitative data on how different age groups prefer various types of coffee when dining out. The research question is: How do coffee preferences vary by generation in restaurant settings?

There is insufficient data on brand preferences among different age groups for home consumption. The research question is: Which coffee brands do different generations prefer for home use?

The impact of advanced coffee-making technology on consumer behavior is under-researched. The research question is: How do modern coffee makers influence coffee consumption habits across different age groups?

A deeper understanding is needed on how environmental conditions, processing techniques, and preparation methods affect coffee flavor, especially in instant and ready-to-drink coffee. The research question is: How do production factors influence the flavor profiles of instant and ready-to-drink coffee, and how can consistency in flavor be ensured?

There is a need for further research to validate and refine existing conceptual models of coffee shop consumption behaviors. The research question is: What specific facets of coffee shop consumption require deeper investigation to enhance the conceptual models?

Aim of the study

To analyze the coffee preferences among different age demographics

Objectives

- To understand coffee preferences of various generations
- To analyze types of coffee preferences by various generations in restaurants.
- To find preferences of various coffee brands at home.

Results and Discussions:

Table 1: Gender

Sl. No	Items	No of Responses	Percentage
1.	Male	51	51.2%
2.	Female	47	47.6%
3.	Others	1	1.2%

A survey concerning coffee preferences was recently circulated, garnering a total of 100 responses. Among the participants, 51% identified as female, while 47% identified as male. The remaining respondents opted not to disclose their gender. This diverse sample provides valuable insights into the varied preferences within the demographic surveyed. We now have a clearer understanding of the individuals who engaged with the form. This information enables us to tailor our analysis and interpretations accordingly, ensuring a comprehensive understanding of the preferences expressed.

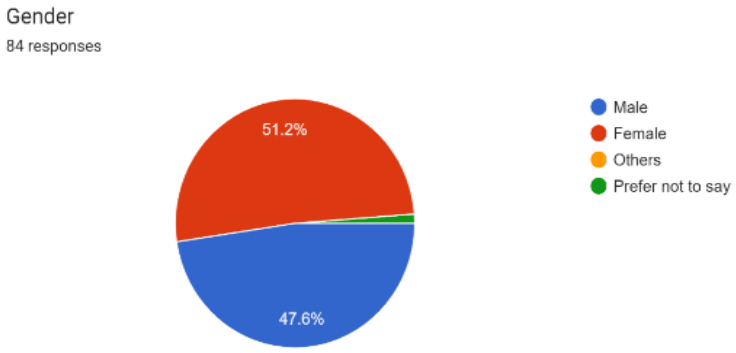

Figure 1: **Gender**

Table 2: **Generation**

Sl. No	Items	No. of Responses	Percentage
1.	Silent Generation 1928-1945	2	1.2%
2.	Baby Boomers 1946-1964	8	7.2%
3.	Generation X 1965-1980	10	9.6%
4.	Millennials 1981-1996	15	14.5%
5.	Generation Z 1997-2012	68	67.5%

The survey also included a question about the participants' year of birth, revealing intriguing generational trends. Among the respondents, 67% belonged to Generation Z, indicating individuals born roughly between the mid-1990s and the early 2010s. Millennials accounted for 14% of the respondents, representing those born between the early 1980s and the mid-1990s. Additionally, 9% identified as Generation X, born between the mid-1960s and the early 1980s, while 7% belonged to the Baby Boomers, typically born between the mid -1940s and the early 1960s. The survey also captured 3% of respondents from the Silent Generation, those born before the mid-1940s. These insights into generational representation offer a deeper understanding of the preferences and behaviours of various age groups regarding coffee consumption.

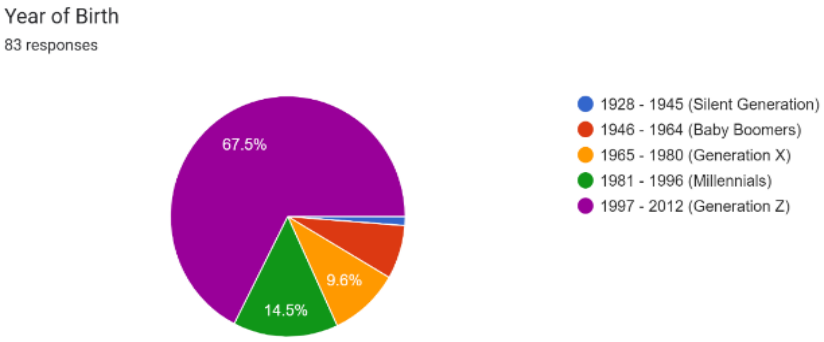

Figure 2: **Generations**

Table 3: **Coffee preferences**

Sl. No.	Items	No of Responses	Percentage
1.	Espresso	10	9.1%
2.	Americano	7	6.5%
3.	Cappuccino	18	16.9%
4.	Latte	15	14.3%
5.	Macchiato	3	3%
6.	Flat white	1	1%
7.	Mocha	5	3.9%
8.	Filter Coffee	39	37.7%
9.	Cold brew	3	2.6%

Among the respondents, diverse preferences in coffee choices were evident. The majority, comprising 37%, favoured South Indian filter coffee, indicative of a strong preference for traditional flavours. Latte was preferred by 14% of the participants, highlighting a preference for creamy and mild coffee experiences. Cappuccino followed closely behind with 16% of respondents expressing a liking for its frothy texture and balanced flavours. Espresso, known for its intense and concentrated taste, appealed to 9% of the participants. Meanwhile, Americano, a

simpler and milder option, was favoured by 7% of the respondents. Macchiato, with its espresso base complemented by a dollop of foamed milk, attracted 6% of the participants. The rich and chocolate notes of mocha appealed to 5% of respondents. Cold brew, appreciated for its smooth and refreshing profile, was preferred by 4% of the participants. Lastly, Flat White, known for its velvety texture and strong espresso flavour, was favoured by 2% of the respondents. These varied preferences reflect the diverse tastes and preferences within the surveyed population regarding coffee consumption.

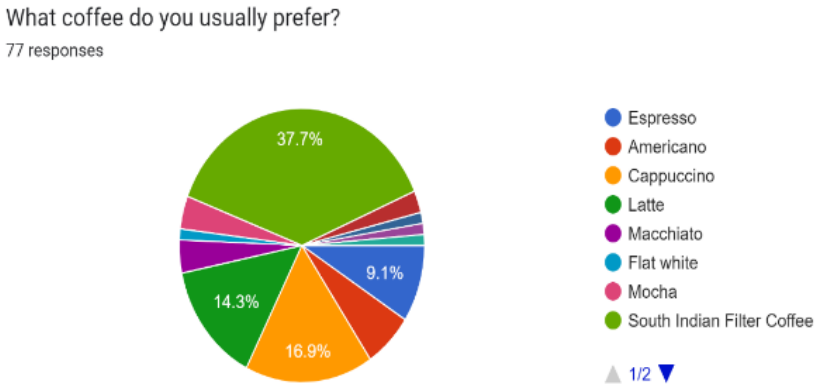

Figure 3: Coffee preferences

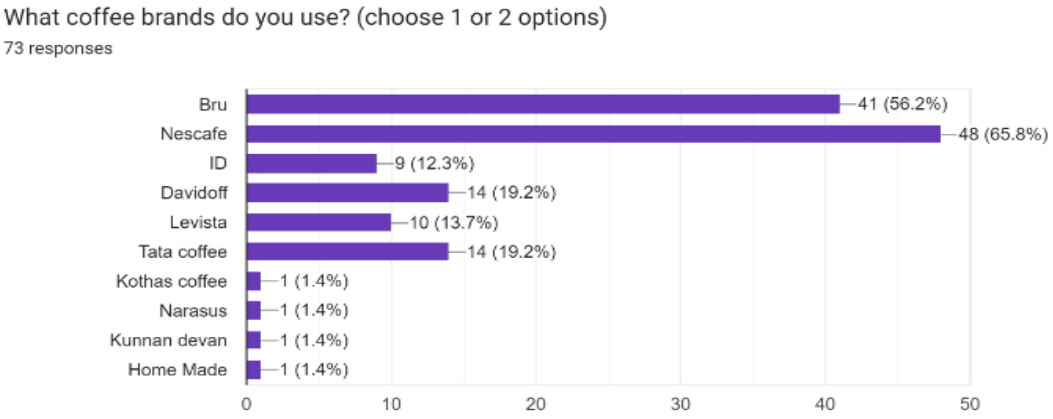

Figure 4: **Coffee brands used at home**

Exploring the participants' coffee habits further, the survey uncovered their preferences for coffee brands used at home. Nescafe emerged as the favoured choice with 48 respondents expressing a preference for its convenience and flavour. Following closely behind, Bru received 41 votes, reflecting a strong preference for its rich taste and aroma. ID coffee, known for its distinctive blends, attracted 9 respondents, indicating a niche preference among the surveyed individuals. Davidoff, renowned for its premium quality and exquisite taste, garnered 14 votes, showcasing a preference for luxury coffee experiences. LaVista, with its emphasis on quality and variety, appealed to 10 respondents. Similarly, Tata Coffee, a trusted Indian brand, received 14

votes, highlighting its popularity among the surveyed population. Additionally, 4 respondents expressed a preference for other coffee brands, showcasing a diverse range of choices among participants. These insights shed light on the diverse array of coffee brands enjoyed by individuals in their homes, reflecting varied preferences and tastes within the surveyed demographic.

Table 4: **Coffee Preferences among Various Generations**

Year of birth	Filter coffee	Cold brew	Macchiato	Latte	Espresso	Americano	Cappuccino	Mocha	Flat white
1981-1996 Millennials	16	3	0	2	1	2	5	0	1
1997-2012 Generation Z	13	7	2	7	3	4	14	9	3
1965-1980 Generation X	19	1	0	3	3	4	9	1	0
1946-1964 Baby Boomers	7	0	0	2	1	3	2	1	0
1928-1945 Silent Generation	4	0	0	0	1	2	4	0	1
TOTAL	59	11	2	14	9	15	34	11	5
Percentage	57.3%	10.63%	1.94%	13.59%	8.74%	14.56%	33.01%	10.68%	4.85%

Table 5: Restaurant Preferences among various generations

Coffee Restaurants	Starbucks	Café Coffee Day	Third Wave Coffee	Blue Tokai	Tim Hortons	Darshini
Silent Generation	2	4	0	1	0	6
Baby Boomers	11	16	5	1	3	11
Generation X	8	14	4	2	2	8
Millennials	16	19	7	3	3	12
Generation z	23	28	19	6	12	4
Total	60	81	35	13	20	41

- Cafe Coffee Day: 81 votes, indicating strong local popularity.
- Starbucks: 60 votes, showing widespread appeal for its global brand.
- Darshini Coffee: 41 votes, highlighting a preference for regional coffee joints.
- Third Wave establishments: 35 votes, reflecting interest in artisanal coffee.
- Tim Hortons: 20 votes, showing recognition beyond its primary market.
- Blue Tokai: 13 votes, indicating niche preference for high-quality beans

Conclusions and Future Scope:

Understanding Coffee Preferences among various Generations

This research delved into coffee preferences across different age groups, aiming to reveal how factors like age, gender, and habits shape coffee enjoyment. By examining various aspects such as preferred coffee types, favorite drinking locations, and favored home brands, the study uncovered significant insights into the diverse coffee culture within the city. These findings offer a comprehensive understanding of how different demographics engage with coffee, highlighting variations in preferences and consumption habits. This knowledge provides valuable information for tailoring marketing strategies and enhancing customer experiences, reflecting the rich and varied coffee culture prevalent among different age groups in the urban landscape.

Range of Preferences Among Generations:

The study found that coffee preferences vary widely among age groups, from traditional blends to specialty drinks, influenced by trends and culture. This information is important for businesses that want to meet different customer tastes. Knowing these preferences helps companies create better marketing strategies and products to appeal to a wide range of coffee lovers.

- Silent Generation (1928-1945): 1.2%
- Baby Boomers (1946-1964): 7.2%
- Generation X (1965-1980): 9.6%
- Millennials (1981-1996): 14.5%
- Generation Z (1997-2012): 67.5%

Coffee Choices in Restaurants:

We discovered interesting differences in coffee choices across generations, with varying preferences for espresso-based drinks and unique brews. This information helps restaurant and coffee shop owners adjust their menus to better match their customers' tastes, ensuring they cater to a wide range of coffee lovers effectively.

- Cafe Coffee Day: 81 votes.
- Starbucks: 60 votes.
- Darshini Coffee: 41 votes.
- Third Wave establishments: 35 votes.
- Tim Hortons: 20 votes.
- Blue Tokai: 13 votes.

Brand Preferences for Home Brewing:

We found that people stick to well-known brands for home brewing, while younger consumers prefer ethically sourced brands and different brewing methods. This trend shows that

sustainability and customization are becoming more important in home coffee choices. It highlights how consumers are increasingly looking for both eco-friendly options and personalized coffee experience

- Nescafe: 48 votes
- Bru: 41 votes
- ID Coffee: 9 votes
- Davidoff: 14 votes
- LaVista: 10 votes
- Tata Coffee: 14 votes
- Other brands: 4 votes

Implications and Suggestions:

The findings indicate that grasping generational preferences is crucial for crafting targeted marketing strategies, innovative products, and engaging customer experiences. Emphasizing sustainability and experiential consumption will help businesses excel in a competitive market. Adapting to these factors can drive growth and enhance brand appeal, ensuring relevance and success in evolving consumer landscapes.

Future Research Directions:

Future research should examine socio-cultural factors, regional variations, and technological advancements influencing coffee consumption in Bangalore. Additionally, long-term studies on generational preferences could offer deeper insights, benefiting business strategies and policy development. These investigations will enhance understanding of evolving coffee trends and consumer behaviors, guiding more effective industry and policy approaches.

References:

1. An analysis of Nescafé in the United States and India. (n.d.-a). Retrieved from https://scholarworks.lib.csusb.edu/cgi/viewcontent.cgi?article=3391&context=etd-project
2. Coffee and health: A review of recent human research. (n.d.-a). Retrieved from https://www.tandfonline.com/doi/pdf/10.1080/10408390500400009
3. Coffee and health. (n.d.). Retrieved from https://www.researchgate.net/publication/265170689_Coffee_and_health
4. Coffee. The Nutrition Source. (2024, May 9). Retrieved from https://nutritionsource.hsph.harvard.edu/food-features/coffee/
5. Cornelis, M. C. (2019, February 16). The impact of caffeine and coffee on human health. *Nutrients*. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6413001/
6. Garciasilva, C. (2024, March 18). Coffee trends through the generations. *Nestle Professional*. Retrieved from [Email communication]

7. Poole, R., Kennedy, O. J., Roderick, P., Fallowfield, J. A., Hayes, P. C., & Parkes, J. (2017, November 22). Coffee consumption and health: Umbrella review of meta-analyses of multiple health outcomes. *BMJ (Clinical research ed.)*. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5696634/
8. Review on coffee quality markers. (n.d.-b). Retrieved from https://www.researchgate.net/publication/343878562_Review_on_coffee_quality_markers
9. Ebenezer, S. (2018, March 1). Consumers' perception towards coffee: A study in Tirunelveli city. *Paripex - Indian Journal of Research*. Retrieved from https://www.worldwidejournals.com/paripex/article/consumers-perception-towards-coffee-a-study-in-tirunelveli-city/OTA1OA==/?is=1
10. Seninde, D. R., & Chambers, E. (2020, July 8). Coffee flavor: A review. *MDPI*. Retrieved from https://www.mdpi.com/2306-5710/6/3/44
11. View of a study on consumers' brand preference towards coffee in Coimbatore District. (n.d.). Retrieved from https://www.tojqi.net/index.php/journal/article/view/2604/1724
12. Wikimedia Foundation. (2024, April 12). History of coffee. *Wikipedia*. Retrieved from https://en.wikipedia.org/wiki/History_of_coffee
13. Williams, H. (2021, January 24). The generations of coffee. *Big Dog Coffee Company*. Retrieved from [URL missing]
14. Wikimedia Foundation. (2024, July 16). History of coffee. *Wikipedia*. Retrieved from https://en.wikipedia.org/wiki/History_of_coffee

INCLUSIVE EDUCATION AND TEACHER PREPARATION: ANALYZING NEP 2020'S VISION AND CHALLENGES

Osceen Mishra* and Ankita Jaiswal
Department of Management Studies,
National Post Graduate College, Lucknow
*Corresponding author E-mail: osceenmishra@gmail.com

Abstract:

Inclusive education, as envisioned by NEP 2020, seeks to integrate students of varying abilities and needs into mainstream classrooms, promoting a culture of acceptance and equal opportunity. This paper explores the implications of the National Education Policy (NEP) 2020 for inclusive education and teacher preparation in India. NEP 2020 promotes an educational framework that emphasizes inclusivity and equal opportunities for all students. This analysis focuses on how the policy's vision impacts the integration of inclusive practices within schools and the preparation of educators. It identifies key challenges such as the need for updated training programs, resource allocation, and support mechanisms. The discussion provides insights into aligning teacher preparation with NEP 2020's goals to enhance effective implementation and advance inclusive education.

Keywords: Teacher Education, Teacher-Educators, Holistic Education.

Introduction:

Inclusive education is a fundamental aspect of the National Education Policy (NEP) 2020, which envisions a holistic, flexible, and multidisciplinary approach to education that ensures equity and inclusivity at all levels. The policy emphasizes the need for an education system that caters to the diverse needs of all students, including those with disabilities, socio-economic disadvantages, and other marginalized groups. In this context, teacher preparation plays a pivotal role in the successful implementation of inclusive education. Effective teacher training is essential to equip educators with the necessary skills, knowledge, and attitudes to foster an inclusive learning environment that accommodates the varied needs of all learners.

The NEP 2020 outlines specific strategies for enhancing teacher education to support inclusive education. These include integrating inclusive pedagogies, promoting experiential learning, and adopting a competency-based approach to teacher training. However, the implementation of these strategies poses significant challenges, including the need for curriculum reform, capacity building, and systemic changes in teacher recruitment and professional development.

This study aims to analyze NEP 2020's vision for inclusive education and the associated challenges in teacher preparation. It will explore the policy's potential to transform the

educational landscape and the practical difficulties that may arise in its implementation. Furthermore, it will involve a detailed analysis of the policy's guidelines and recommendations related to inclusive education and how they align with global best practices. This paper will focus on evaluating existing teacher education programs, identifying gaps, and understanding the readiness of educators to adopt inclusive teaching practices. It will further explore the practical obstacles faced by teacher education institutions, including curriculum reforms, resource constraints, and resistance to change. Based on the findings, this research will suggest actionable steps and policy recommendations to enhance teacher training programs and support the effective implementation of inclusive education as per NEP 2020. This will involve a longitudinal analysis of the outcomes of NEP 2020's initiatives on inclusive education, focusing on both short-term and long-term effects on teacher preparedness and student inclusion. It will provide valuable insights into the intersection of inclusive education and teacher preparation, offering practical recommendations for policymakers, educators, and institutions striving to achieve the goals set forth by NEP 2020.

This research will provide valuable insights into the intersection of inclusive education and teacher preparation, offering practical recommendations for policymakers, educators, and institutions striving to achieve the goals set forth by NEP 2020.

Objectives:

1. To examine the vision of inclusive education as articulated in NEP 2020.
2. To assess the current state of teacher preparation for inclusive education in India
3. To identify the challenges in implementing inclusive education through teacher preparation under NEP 2020
4. To propose strategies for overcoming the challenges in teacher preparation for inclusive education.
5. 5.To evaluate the impact of NEP 2020 on inclusive education and teacher preparation over time.

Challenges of Indian Teacher Education vis -a-vis NEP 2020

The National Education Policy (NEP) 2020 aims to revolutionize the Indian education system by emphasizing quality, inclusivity, and flexibility across all levels of education. Teacher education is a critical component of this transformation, as teachers are the backbone of the education system. However, the implementation of NEP 2020 in the context of teacher education presents several challenges. These challenges are deeply rooted in the existing structure, practices, and resources of Indian teacher education institutions. Below is an elaboration on the key challenges:

1. Curriculum and Pedagogical Reforms

NEP 2020 calls for a comprehensive overhaul of the teacher education curriculum to align it with contemporary needs, including a focus on multidisciplinary learning, experiential

education, and the integration of technology. However, the current curriculum in many teacher education institutions remains outdated, heavily theoretical, and disconnected from classroom realities. The challenge lies in redesigning and implementing a curriculum that balances traditional pedagogical knowledge with innovative teaching methods, digital literacy, and the diverse needs of modern learners.

2. Four-Year Integrated B. Ed. Program

One of the most significant reforms proposed by NEP 2020 is the introduction of a four-year integrated Bachelor of Education (B.Ed.) program. While this initiative aims to produce well-rounded and highly skilled teachers, its implementation faces multiple hurdles. Many teacher education institutions lack the infrastructure, faculty, and resources to offer a comprehensive four-year program. Additionally, the shift from a two-year to a four-year program may deter prospective teachers due to the increased time commitment and associated costs.

3. Teacher Quality and Professional Development

NEP 2020 emphasizes continuous professional development (CPD) for teachers to keep pace with evolving educational practices. However, the existing professional development opportunities for teachers in India are often limited, sporadic, and not aligned with their specific needs. There is also a lack of a structured framework for CPD, resulting in disparities in teacher training across different regions. Ensuring that all teachers, especially those in rural and remote areas, have access to high-quality, ongoing professional development is a significant challenge.

4. Infrastructural and Resource Constraints

Many teacher education institutions in India suffer from inadequate infrastructure, including a lack of modern classrooms, libraries, laboratories, and digital tools. These deficiencies impede the adoption of new teaching methods and the integration of technology in education, both of which are critical components of NEP 2020. Additionally, the lack of financial resources to upgrade infrastructure and provide quality learning materials poses a substantial challenge to achieving the policy's goals.

5. Diversity and Inclusion in Teacher Education

NEP 2020 places a strong emphasis on inclusive education, which requires teachers to be trained in addressing the needs of diverse learners, including those with disabilities and those from socio-economically disadvantaged backgrounds. However, current teacher education programs often lack a strong focus on diversity and inclusion. Developing and implementing training modules that equip teachers with the skills to create inclusive classrooms is a complex task, particularly given the socio-cultural diversity of India.

6. Assessment and Evaluation Reforms

The NEP 2020 advocates for reforms in the assessment and evaluation of teacher education, moving away from rote memorization to more comprehensive, formative assessments. However, the current evaluation system in teacher education is largely exam-centric, with limited

emphasis on practical teaching skills and critical thinking. Transitioning to a more holistic assessment approach that truly reflects a teacher's abilities is a challenge that requires changes in both mindset and methodology.

7. Faculty Development and Recruitment

The quality of teacher educators is a crucial factor in the success of any teacher education program. However, there is a shortage of qualified teacher educators in India, and many existing faculty members may not be adequately trained in the latest educational practices and technologies. NEP 2020's vision of transforming teacher education will require significant investment in faculty development programs and the recruitment of highly qualified educators who can lead these initiatives.

8. Institutional Autonomy and Accountability

NEP 2020 encourages greater autonomy for teacher education institutions to innovate and improve their programs. However, this autonomy must be balanced with accountability to ensure that institutions maintain high standards of education. In the current system, many institutions lack the capacity to exercise autonomy effectively, leading to variations in the quality of teacher education across the country. Establishing a robust regulatory framework that ensures accountability while promoting innovation is a critical challenge.

9. Rural-Urban Divide in Teacher Education

The disparity between rural and urban teacher education institutions is a longstanding issue in India. While NEP 2020 aims to bridge this gap by improving access to quality education for all, the reality is that rural institutions often lack the necessary resources, infrastructure, and trained faculty to deliver on these promises. Addressing this rural-urban divide is essential to ensure that all teachers, regardless of their location, receive a high standard of education and training.

10. Resistance to Change

Finally, one of the most pervasive challenges in implementing the reforms proposed by NEP 2020 is resistance to change. This resistance can come from various quarters, including educators, institutions, and policymakers who may be accustomed to the traditional ways of doing things. Overcoming this resistance requires a concerted effort to build awareness, provide adequate training, and demonstrate the benefits of the proposed changes.

While NEP 2020 offers a visionary roadmap for transforming teacher education in India, the challenges to its implementation are significant. Addressing these challenges will require coordinated efforts from the government, educational institutions, educators, and the broader community. By focusing on curriculum reform, professional development, infrastructure, inclusivity, and institutional accountability, India can move towards realizing the ambitious goals set forth by NEP 2020 and ensure that its teachers are well-prepared to meet the needs of a diverse and rapidly changing society.

Recommendations of NEP 2020 With Regard to Teacher Education

The National Education Policy (NEP) 2020 outlines a comprehensive vision for transforming teacher education in India, emphasizing the need for high-quality training, professional development, and continuous improvement. These recommendations present numerous possibilities for elevating the status and effectiveness of teachers in the Indian education system. Here is an elaboration on the key recommendations of NEP 2020 concerning teacher education and the possibilities they offer:

1. Introduction of a Four-Year Integrated B.Ed. Program

NEP 2020 proposes the introduction of a four-year integrated Bachelor of Education (B.Ed.) program as the minimum degree qualification for school teachers by 2030.

- **Holistic Teacher Preparation:** This program offers the possibility of more comprehensive teacher preparation by integrating subject knowledge, pedagogical skills, and practical experience over four years. It can produce well-rounded educators who are better equipped to handle the complexities of modern classrooms.
- **Early Specialization:** The integrated program allows for early specialization in specific subjects or grade levels, ensuring that teachers have a deep understanding of the content they will teach.
- **Enhanced Professional Status:** A longer, more rigorous training program can elevate the professional status of teachers, making teaching a more attractive and respected career choice.

2. Emphasis on Multidisciplinary and Holistic Education

NEP 2020 advocates for a multidisciplinary approach in teacher education, integrating knowledge from various fields, including the arts, sciences, and social sciences, to create holistic and well-rounded educators.

- **Interdisciplinary Teaching:** Teachers trained in multidisciplinary environments can bring interdisciplinary perspectives to their classrooms, fostering critical thinking and creativity among students.
- **Adaptability:** Educators with a broad knowledge base can adapt to various teaching contexts and cater to the diverse needs of students, making education more inclusive and dynamic.
- **Promotion of Lifelong Learning:** This approach encourages teachers to view learning as a lifelong process, motivating them to continually update their knowledge and skills.

3. Inclusion of Technology in Teacher Training

NEP 2020 emphasizes the integration of technology in teacher education to enhance teaching and learning outcomes, as well as to prepare teachers for the digital age.

- **Digital Literacy:** Teachers trained in the effective use of technology can incorporate digital tools in their teaching, making learning more engaging and accessible for students.

- **Blended Learning:** The policy supports the possibility of blended learning models, where teachers use a mix of in-person and online instruction, making education more flexible and personalized.
- **Access to Resources:** Technology can provide teachers with access to a wide range of educational resources, professional development opportunities, and global best practices, enhancing their effectiveness in the classroom.

4. Continuous Professional Development (CPD)

NEP 2020 mandates continuous professional development for teachers, with at least 50 hours of CPD every year to keep teachers updated with the latest educational trends and methodologies.

- **Ongoing Skill Enhancement:** Regular professional development can help teachers stay current with new teaching strategies, technologies, and subject knowledge, improving their classroom performance.
- **Professional Growth:** Structured CPD programs offer the possibility of career progression for teachers, leading to greater job satisfaction and retention.
- **Reflective Practice:** CPD encourages teachers to reflect on their practice, leading to continuous improvement and innovation in teaching.

5. Introduction of National Professional Standards for Teachers (NPST)

NEP 2020 recommends the development of National Professional Standards for Teachers (NPST) to define the competencies required at different stages of a teacher's career.

- **Standardization of Teacher Quality:** NPST can ensure consistency in teacher quality across the country, providing a clear framework for teacher development and assessment.
- **Career Pathways:** The standards can outline clear career pathways for teachers, allowing them to progress based on their skills and competencies.
- **Accountability:** NPST can enhance teacher accountability, ensuring that educators meet high standards of professionalism and effectiveness in their teaching practice.

6. Strengthening Teacher Education Institutions (TEIs)

NEP 2020 calls for the revitalization of teacher education institutions, ensuring they are well-resourced, have qualified faculty, and are aligned with the new education policy's vision.

- **Quality Assurance:** Strengthening TEIs can lead to the production of high-quality teachers who are well-prepared to meet the demands of modern education.
- **Innovation in Teaching:** Well-resourced TEIs can become centers of innovation in teaching and learning, contributing to the overall improvement of the education system.
- **Collaboration and Networking:** Stronger TEIs can foster collaboration among educators, policymakers, and researchers, leading to the exchange of ideas and best practices in teacher education.

7. Inclusion of Local Contexts and Knowledge

NEP 2020 emphasizes the importance of including local knowledge, languages, and contexts in teacher education to make education more relevant and culturally responsive.

- **Culturally Relevant Pedagogy:** Teachers trained to incorporate local contexts and knowledge can provide more meaningful and relatable education to students, enhancing their engagement and learning outcomes.
- **Preservation of Indigenous Knowledge**: The policy supports the possibility of preserving and promoting indigenous knowledge systems, languages, and cultural heritage through education.
- **Community Involvement:** By integrating local contexts into teacher education, there is a greater possibility of involving communities in the education process, fostering a sense of ownership and collaboration.

8. Focus on Inclusive Education

NEP 2020 strongly advocates for inclusive education, ensuring that teachers are trained to cater to the diverse needs of all students, including those with disabilities and from marginalized communities.

- **Diverse Learning Needs:** Teachers trained in inclusive education can address the diverse learning needs of students, ensuring that every child has the opportunity to succeed.
- **Reduction of Learning Gaps:** The focus on inclusion can help reduce learning gaps and disparities among students from different socio-economic backgrounds.
- **Social Cohesion:** Inclusive education can promote social cohesion by fostering an environment where diversity is respected and valued.

9. Increased Autonomy for Teacher Education Institutions

NEP 2020 encourages greater autonomy for teacher education institutions, allowing them to innovate and adapt to the needs of their specific contexts. The various possibilities are:

- **Institutional Innovation:** Autonomy can lead to innovative approaches in teacher education, allowing institutions to experiment with new teaching methods, curricula, and assessment practices.
- **Contextual Relevance:** Institutions with greater autonomy can tailor their programs to the specific needs of their regions, making teacher education more relevant and effective.
- **Enhanced Quality:** Autonomy can drive quality improvements in teacher education, as institutions have the freedom to focus on excellence and meet high standards.

10. Revamping of Regulatory Framework

NEP 2020 proposes the establishment of a robust regulatory framework for teacher education to ensure quality and accountability across institutions.

- **Consistency and Quality Control**: A well-defined regulatory framework can ensure that all teacher education institutions meet high standards of quality, leading to a more consistent and reliable teacher workforce.
- **Transparency:** Clear regulations can bring transparency to the functioning of teacher education institutions, building trust among stakeholders and ensuring that educational outcomes are met.
- **Support for Innovation**: The regulatory framework can support innovation by providing guidelines that encourage experimentation while maintaining accountability.

The recommendations of NEP 2020 concerning teacher education open up numerous possibilities for the transformation of the Indian education system. By focusing on comprehensive and multidisciplinary training, continuous professional development, and inclusivity, the policy sets the stage for creating a highly skilled and motivated teaching workforce. While challenges exist in implementing these recommendations, the potential for positive change is significant. With the right strategies and commitment from all stakeholders, NEP 2020 can pave the way for a more equitable, inclusive, and high-quality education system in India.

Conclusion:

National Education Policy (NEP) 2020 represents a transformative vision for inclusive education in India, emphasizing the need for educational environments that cater to the diverse needs of all students. Central to this vision is the role of teacher preparation, which is pivotal for implementing inclusive practices effectively. NEP 2020 highlights the importance of equipping educators with the necessary skills, knowledge, and resources to support a diverse student population.

However, achieving these objectives presents significant challenges. Teacher preparation programs must undergo substantial reforms to address gaps in training, resource availability, and support mechanisms. Effective implementation of NEP 2020 requires a multifaceted approach, including updating curricula, integrating inclusive teaching strategies, and fostering continuous professional development for educators.

Addressing these challenges is crucial for realizing NEP 2020's vision of an equitable educational system. By aligning teacher preparation with the policy's goals, educational institutions can better support inclusive practices, ultimately contributing to a more inclusive and effective learning environment for all students. This alignment not only enhances the quality of education but also ensures that every student has the opportunity to succeed, regardless of their background or abilities.

References:

1. Baeder, J. (2011, November 21). Recommendations for Developing Teacher Evaluation Systems. Education Week.

https://www.edweek.org/leadership/opinionrecommendationsfor-developing-teacher-evaluation-systems/2011/11

2. Brown, A. (2017, January 31). 6 Sustainable Teaching Practices to Use Now. Medium. *https://teacher-blog.education.com/6-sustainable-teaching-practices-to-use-now-7c89ef54d641*
3. Burroughs, N., Gardner, J., Lee, Y., Guo, S., Touitou, I., Jansen, K., & Schmidt, W. (2019). A Review of the Literature on Teacher Effectiveness and Student Outcomes. IEA Research for Education, 6, 7–17. *https://doi.org/10.1007/978-3-030-16151-4_2*
4. Cleaver, S., States, J., Detrich, R., Keyworth, R., Donley, J., & Guinness, K. (2018). Teacher Evaluation. Wing Institute Original Papers, 1–17. *https://www.researchgate.net/publication/326655977_Teacher_Evaluation_Wing_Institute_Original_Paper*
5. Cody, A. (2010, February 28). Teacher Responsibility for Student Learning: What is Our Share? (Opinion). Education Week. *https://www.edweek.org/education/opinionteacherresponsibility-for-student-learning-what-is-our-share/2010/02*
6. Robinson, S. (2018). Teacher Evaluations - Why Teacher Performance Matters. Frontline Education. *https://www.frontlineeducation.com/teacher-evaluation/*
7. Stronge, J. H., Grant, L. W., & Xu, X. (2013). Teacher Evaluation and Teacher Effectiveness. Education. *https://doi.org/10.1093/obo/9780199756810-0138*
8. Taylor, E. S., & Tyler, J. H. (2012). The Effect of Evaluation on Teacher Performance. American Economic Review, 102(7), 3628–3651. *https://doi.org/10.1257/aer.102.7.3628*
9. Teacher Evaluation: A Step Towards Quality Teaching and Learning. (2022, April Professionalisation Of Teacher Education Recent Trends & Future Perspectives 127 28). Safety Culture. *https://safetyculture.com/topics/teacher-evaluation/*
10. The effectiveness of pedagogy.(n.d.). *https://www.education.sa.gov.au/effectivenesspedagogy*
11. Wile, E. (2011). Advantages & Disadvantages of Using Observations for Teacher Evaluation. The Classroom | Empowering Students in Their College Journey. *https://www.theclassroom.com/advantages-using-observations-teacher-evaluation-s8079718.html*

INDUSTRY 5.0 - A NEW ERA OF HUMAN-CENTRIC INNOVATION

Pranati Misra and Radhika Sharma

National Post Graduate College, Lucknow

Abstract:

This chapter explores the emerging paradigm of Industry 5.0, which represents a significant shift from the automation-driven focus of Industry 4.0 to a more human-centric approach. Building on the advancements of previous industrial revolutions, Industry 5.0 emphasizes the collaboration between humans and advanced technologies, such as artificial intelligence, collaborative robots, and the Internet of Things, to enhance creativity, innovation, and sustainability in industrial processes. The chapter traces the evolution of industrial innovation, examines the technological components integral to Industry 5.0, and discusses the societal impacts, including changes in employment, education, and social equity. It also addresses the ethical, technological, and economic challenges posed by this new industrial era. Ultimately, Industry 5.0 aims to create a more inclusive and ethical industrial landscape where technology serves to augment human capabilities, ensuring that innovation is aligned with societal well-being.

Introduction:

The dawn of the 21st century has been marked by rapid technological advancements, with each decade introducing transformative changes in the industrial landscape. While Industry 4.0 has been characterized by the integration of digital technologies like the Internet of Things (IoT), artificial intelligence (AI), and big data analytics into manufacturing and other industries, a new wave is emerging. This wave, termed Industry 5.0, seeks to bring a more human-centric approach to these technological advancements. This chapter delves into the concept of Industry 5.0, exploring its evolution, technological components, societal implications, and the challenges that lie ahead.

Evolution from Industry 1.0 to Industry 5.0

1. The Industrial Revolution: Industry 1.0 to Industry 3.0

The industrial landscape has evolved through several distinct phases, each driven by significant technological and societal changes:

- **Industry 1.0**: The first industrial revolution, which began in the late 18th century, was marked by the mechanization of production through water and steam power. This period saw the rise of factories and mass production, fundamentally transforming economies and societies.

- **Industry 2.0:** The second industrial revolution, in the late 19th and early 20th centuries, introduced electricity, the assembly line, and mass production. This era was characterized by increased productivity and the growth of global trade.
- **Industry 3.0:** The third industrial revolution, beginning in the mid-20th century, was driven by the advent of computers, automation, and electronics. This period saw the rise of information technology and the digitization of manufacturing processes, leading to greater efficiency and the ability to produce complex products.

2. The Rise of Industry 4.0

Industry 4.0, which emerged in the early 21st century, represents a significant leap forward in industrial innovation. It is characterized by the integration of cyber-physical systems, IoT, AI, and big data into manufacturing and other industries. Industry 4.0 has enabled smart factories where machines and systems communicate with each other, optimizing production processes and enabling real-time decision-making. The impact of Industry 4.0 has been profound, leading to increased productivity, reduced costs, and the development of new business models. However, it has also raised concerns about the displacement of human workers by machines and the ethical implications of AI and automation.

3. The Emergence of Industry 5.0

In response to the challenges posed by Industry 4.0, Industry 5.0 has emerged as a new paradigm. Unlike its predecessor, Industry 5.0 emphasizes the collaboration between humans and machines, rather than their replacement. This shift towards human-centric innovation seeks to leverage the strengths of both humans and machines, combining the creativity, intuition, and problem-solving abilities of humans with the precision, efficiency, and data-processing capabilities of machines.

Technological Components of Industry 5.0

Industry 5.0 is built on a foundation of advanced technologies, many of which were developed during the industry 4.0 era. However, these technologies are now being utilized in ways that prioritize human values and societal well-being.

1. Human-Robot Collaboration

One of the defining features of Industry 5.0 is the collaboration between humans and robots, often referred to as cobots (collaborative robots). Unlike traditional industrial robots, which operate in isolation from human workers, cobots are designed to work alongside humans, assisting them in tasks that require precision, strength, or repetitive motion. Cobots are equipped with advanced sensors and AI, allowing them to adapt to their environment and work safely with humans. This collaboration enhances productivity while allowing humans to focus on tasks that require creativity, critical thinking, and emotional intelligence.

2. Artificial Intelligence and Machine Learning

AI and machine learning continue to play a central role in Industry 5.0, but their application is now more focused on augmenting human capabilities rather than replacing them. For example, AI can be used to analyze large datasets and provide insights that help human workers make more informed decisions. In healthcare, AI can assist doctors in diagnosing diseases by analyzing medical images and data, while still relying on the expertise and judgment of the human physician.

3. Internet of Things (IoT) and Edge Computing

The IoT and edge computing are critical components of Industry 5.0, enabling real-time communication and data processing at the edge of the network. This allows for faster decision-making and more efficient operations. In an Industry 5.0 context, IoT devices are not only used to optimize production processes but also to improve working conditions for humans, such as monitoring workplace safety and ergonomics.

4. Digital Twins

Digital twins, which are virtual replicas of physical assets, systems, or processes, are used extensively in Industry 5.0. These digital models allow for real-time monitoring, simulation, and optimization of industrial processes. In a human-centric context, digital twins can be used to create more personalized and adaptive manufacturing environments, where human workers are supported by data-driven insights that enhance their performance and well-being.

5. Advanced Materials and Additive Manufacturing

Industry 5.0 also leverages advancements in materials science and additive manufacturing (3D printing) to create more sustainable and customizable products. These technologies enable the production of complex, high-quality components with less waste and energy consumption. In addition, they allow for greater customization, enabling manufacturers to meet the specific needs and preferences of individual customers.

The Human-Centric Approach

Industry 5.0 represents a shift towards a more human-centric approach to industrial innovation, where technology is seen as a tool to enhance human capabilities rather than a means to replace them.

1. Enhancing Human Creativity and Innovation

One of the key goals of Industry 5.0 is to create environments where human creativity and innovation can flourish. By automating routine tasks and providing humans with advanced tools and insights, Industry 5.0 enables workers to focus on more complex and creative tasks. This not only leads to greater job satisfaction but also drives innovation and the development of new products and services.

2. Ethical and Responsible AI

The development of ethical and responsible AI is a central concern in Industry 5.0. This involves ensuring that AI systems are transparent, fair, and aligned with human values. It also requires addressing issues such as data privacy, bias, and the potential for AI to be used in ways that harm individuals or society. In an Industry 5.0 context, AI is not just a tool for optimizing processes but a partner in creating a more ethical and sustainable future.

3. Sustainability and Social Responsibility

Sustainability is a core principle of Industry 5.0. This involves not only reducing the environmental impact of industrial processes but also creating products and services that contribute to a more sustainable society. Industry 5.0 also emphasizes social responsibility, including fair labor practices, inclusive workplaces, and the creation of products that improve quality of life.

Societal Impacts of Industry 5.0

The transition to Industry 5.0 has far-reaching implications for society, particularly in terms of employment, education, and social equity.

1. Employment and the Future of Work

One of the most significant societal impacts of Industry 5.0 is its effect on employment. While Industry 4.0 raised concerns about job displacement due to automation, Industry 5.0 offers the potential for new types of jobs that leverage human skills and creativity. However, this transition also requires significant investment in education and training to ensure that workers have the skills needed to thrive in a more technologically advanced workplace.

2. Education and Lifelong Learning

The rapid pace of technological change in Industry 5.0 necessitates a shift towards lifelong learning. Traditional education systems, which focus on preparing students for specific careers, may no longer be sufficient in a world where technology and job requirements are constantly evolving. Instead, there is a growing need for education systems that promote adaptability, creativity, and critical thinking, as well as ongoing opportunities for upskilling and reskilling throughout a person's career.

3. Social Equity and Inclusion

Industry 5.0 also has the potential to address issues of social equity and inclusion. By creating more personalized and adaptive work environments, Industry 5.0 can help to include marginalized groups in the workforce and reduce inequalities. However, achieving this goal requires a concerted effort to ensure that the benefits of Industry 5.0 are accessible to all, regardless of socioeconomic status, gender, or other factors.

Challenges and Risks

While Industry 5.0 holds great promise, it also presents significant challenges and risks that must be addressed.

1. Ethical and Legal Challenges

The ethical and legal challenges associated with AI, data privacy, and automation are particularly pronounced in Industry 5.0. As technology becomes more integrated into our lives and workplaces, there is a growing need for clear and enforceable regulations that protect individuals and society from potential harm. This includes ensuring that AI systems are transparent, fair, and accountable, as well as addressing issues such as data privacy and the potential for AI to be used in ways that are harmful or unethical.

2. Technological Challenges

The technological challenges of Industry 5.0 are also significant. Integrating advanced technologies such as AI, IoT, and cobots into existing industrial systems is a complex and costly process that requires significant investment and expertise. Additionally, ensuring the interoperability and security of these technologies is critical to their success.

3. Economic and Social Risks

The economic and social risks of Industry 5.0 are closely tied to its potential to disrupt existing industries and job markets. While Industry 5.0 has the potential to create new jobs and opportunities, it may also lead to job displacement and increased inequality if not managed carefully. Addressing these risks requires a comprehensive approach that includes investment in education and training, as well as social policies that support workers during periods of transition.

Conclusion:

Industry 5.0 represents a new era of human-centric innovation that seeks to harness the power of technology to enhance human capabilities, creativity, and well-being. While it builds on the technological advancements of Industry 4.0, Industry 5.0 marks a significant shift towards a more ethical, sustainable, and inclusive approach to industrial innovation. However, realizing the full potential of Industry 5.0 requires addressing the significant challenges and risks it presents, particularly in terms of ethics, technology, and social equity. As we move forward into this new era, it is essential that we prioritize the human aspects of innovation, ensuring that technology serves to enhance, rather than diminish, our shared humanity.

References:

1. Brettel, M., Friederichsen, N., Keller, M., & Rosenberg, M. (2014). How Virtualization, Decentralization and Network Building Change the Manufacturing Landscape: An Industry 4.0 Perspective. International Journal of Mechanical, Industrial Science and Engineering, 8(1), 37-44.

2. Gorecky, D., Schmitt, M., Loskyll, M., & Zühlke, D. (2014). Human-machine-interaction in the industry 4.0 era. Proceedings of the 12th IEEE International Conference on Industrial Informatics, 289-294.
3. Kagermann, H., Wahlster, W., & Helbig, J. (2013). Recommendations for implementing the strategic initiative INDUSTRIE 4.0: Securing the future of German manufacturing industry. Final report of the Industry 4.0 Working Group, 1-82.
4. Madsen, O. B., & Ma, X. (2021). Industry 5.0: Towards a New Paradigm in Industry 4.0.Procedia Computer Science, 180, 132-138.
5. Romero, D., & Stahre, J. (2019). Towards the resilient operator 5.0: The future of human automation interaction IFAC-Papers On Line, 52(19), 150-155.
6. Schwab, K. (2016). The Fourth Industrial Revolution. World Economic Forum.
7. Xu, L. D., Xu, E. L., & Li, L. (2018). Industry 4.0: State of the art and future trends. International Journal of Production Research, 56(8), 2941-2962.

INTEGRATED E-FINANCIAL MANAGEMENT SYSTEM: A KEY TO SUCCESS OF FISCAL PLANNING OF THE GOVERNMENT (WITH SPECIAL REFERENCE TO RAJASTHAN STATE)

Sanjay Kumar Panchal

Department of EAFM,

Government Commerce College, Kota (Rajasthan) 324005

Corresponding author E-mail: skpanchal87@gmail.com

Abstract:

The Rajasthan State's financial management is under the control of the Integrated Financial Management System (IFMS 3.0), a comprehensive suite of finance-related programs. It includes accounting, budgeting, payments, expenses, receipts, and works management. The system has been implemented by the Rajasthan government's Finance Department since 01.02.2024, aiming to improve the system's effectiveness, transparency, and usability. It integrates budget preparation, implementation, accounting, and reporting, resulting in total automation of financial management procedures. This has eliminated redundant work and improved decision-making consistency through information sharing. The IFMS 3.0 was a challenging project, covering over 67 administrative departments, 145 departments, 41 treasuries, 258 sub-treasuries, 45 banks, and 32000 drawing & disbursing offices. This study aims to provide a comprehensive understanding of this innovative integrated e financial management system, utilizing budgetary records and statistics from the Rajasthan government's Finance Department website and primary data gathered through conversations with government representatives.

Keywords: Financial Management, Integrated, Government Office, Rajasthan

Introduction:

The fundamentals of the integrated e-financial management system utilized in government offices will be covered in this chapter for the students. The goal of an integrated financial management system in the public sector is to maximize employee productivity and efficiency, which inevitably increases organizational profits. An integrated financial management system has three primary functions: accounting, budgeting, and drawing and distribution. Additionally, students will discover that DDO's responsibilities have evolved over time.

Learning Objectives

After learning this chapter, you will be able to understand:

- To explore the level of awareness and adoption of IFMS applications.

- To examine the reason for adoption and non-adoption of the IFMS application in government offices.
- To analyze main modules and/or utilities of IFMS applications.
- To evaluate the operational performance of IFMS application in Government Offices.
- To identify major reason/s for use or non-use of IFMS applications by government employees.
- To know about main functions covered by the Integrated e-financial management System Application
- To know about main objectives of Integrated e-financial management System Application (IFMS)
- The role of Drawing & Disbursing Officer (DDO)

Finance

A vital component of general management is finance, which includes organizing, raising, assigning, and regulating all financial activity. It is a systematized set of knowledge that aids in decision-making for organizations regarding what must be paid for and when, how best to raise money, and how to allocate money. To minimize or prevent financial waste, finance must be closely linked to the manufacturing, marketing, and accounting departments.

Personal finance, corporate finance, and public (government) finance are the three primary subcategories of finance. Personal finance refers to specialized financial plans, including investing in different types of investments or saving for retirement, which are based on an individual's activities and situation. Personal finance includes banking as well because people utilize checking and savings accounts as well as online and mobile payment systems like Venmo and PayPal.

Corporate finance is the term used to describe the financial operations of a corporation, which are often managed by a department or division. While startups may obtain funding from angel investors or venture capitalists in exchange for a stake in the company, larger companies may choose to seek extra funds through bond issues or stock offerings. In order to raise capital, a company that decides to go public may choose to issue shares through an initial public offering (IPO) on a stock exchange.

Public finance includes policies related to taxation, expenditure, budgeting, and debt issuance that impact a government's ability to pay for services rendered to the general public. As a component of fiscal policy, it monitors income distribution, resource allocation, and economic stability in order to assist avert market failure. The majority of regular revenue for government spending comes from taxes; additional funding comes from borrowing from banks, insurance providers, and other countries. Apart from overseeing financial matters for daily operations, a government bears social and fiscal obligations, such as guaranteeing sufficient social services for

its tax-paying populace and preserving a steady economy that encourages saving and ensures the security of personal funds.

Financial Management

Management of finances is a crucial component of management overall. It has to do with making decisions made by managers. It supports resource allocation, problem assessment, and future financial requirement allocation. A corporation's methods of obtaining and allocating funds are the subjects of financial management. Hoagland Financial management involves integrating planning and control elements into the finance department. Ambrosio and Archer — — the administration of the finance function might be regarded as financial management. – Raymond Chambers In order to help a company advance towards achieving its objectives, financial management is the branch of business management that focuses on smart capital allocation and source selection. — Bradley J.F.

Integrated e-Financial Management System (IFMS) in Government of Rajasthan

A web-based tool called the Integrated Financial Management System (IFMS) was created to automate several critical processes related to government financial accounting, such as treasury, distribution/allocation, estimate preparation, and budget planning. The State Government put it into effect in 2010–11 to fix the issues with the previous offline computerization that related to Treasury and budgetary procedures. The IFMS offers a support system to bolster government financial controls and permits efficient and controlled access to all financial data of the government. The budget process, which incorporates state-wide receipts and expenditures, is the primary accounting procedure used by the government. Prior to the use of IFMS, all budgetary controls were performed manually, including departmental and treasury revenue receipt reconciliation and budget availability checks. The Treasury and Finance Departments can view a comprehensive picture of the overall budget expenditure on a daily basis in comparison to the allocated budget thanks to the IFMS. In real time, the system updates to reflect any modification in the Finance Department's budget allocation. Similar to that, this system also has information on full revenue receipts. With the goal of effective monitoring, the IFMS has been developed to grow into an umbrella system that will encompass all modular systems and their integration in order to eventually reach the status of full computerization of financial transactions throughout the state. The State budget distribution, finalization, and estimating process is now done online, which has made it a useful instrument for budget control. Faster communication is now possible with the AG office and all 345 bank locations. The work has been made simpler by the online availability of payment and receipt information for reconciliation. For planning purposes, the State's comprehensive personnel and pensioner database will also be accessible. Errors are eliminated when salary payments are made online, and employees may view their salary status and any justifications for pay adjustments. Any

wherever-at-anytime tax payment option that e-Grass proposes to offer will also be advantageous to taxpayers. Pensioners will be able to track their individual pensions, and time and energy will be saved as a consequence of the fully automated application filing, sanctioning, and payout processes. The Rajasthan Transparency in Public Procurement Act, 2012, which covers all Departments and their offices, Zila Parishads, Panchayat Samities, Gramme Panchayats, Municipal Corporations, Municipalities, Autonomous Bodies, and Boards, is the basis for the development of the State Public Procurement Portal under IFMS. The public will be able to upload items pertaining to public procurement on this platform.

Prior to this initiative, the Finance Department's computerization was limited to the preparation of budgets using offline computerized systems that could generate MIS reports. Additionally, the Treasury Department used offline computerized systems for bill processing, pay bill generation, softcopy account submission to AG, Employee's Pay Bill Data Depository System, Computerized Cheque issuance, Data Bank of Old Age Pensioners and Pension Master, among other purposes. The work was being done everywhere through computers but in a disintegrated way. The State Government decided to integrate all functions pertaining to workers, pensioners, citizens, banks, and the AG office and implement the Integrated Financial Management System (IFMS), a web-based single application system for Government Financial Accounting, after realizing the necessity for complete automation of Government accounting.

E-Public Financial Management System (PFMS) in Government of India

PFMS is a web-based software application developed by the Controller General of Accounts (CGA) of the Department of Expenditure, Ministry of Finance, and Government of India. It was initially designed to track funds released under all Plan schemes and provide real-time reporting of expenditure at all levels of Programme implementation. Over time, the scope expanded to cover direct payment to beneficiaries under all Schemes. PFMS' primary function is to facilitate a sound Public Financial Management System for the Government of India by establishing an efficient fund flow system and payment cum accounting network. It interfaces with the treasury systems of all 28 States and the 2 Union Territories with Legislatures, facilitating data exchange regarding budget, allocation, and expenditure against central transfers of funds for Centrally Sponsored Schemes. PFMS is integrated with the Core Banking system, allowing it to validate accounts before pushing online payments to almost every beneficiary/vendor. It also serves as the channel for payment, accounting, and reporting under Direct Benefit Transfer, enabling every Department/Ministry of Government of India to transfer funds electronically to beneficiaries.

Integrated e-Financial Management System (IFMS) in Government of Kerala

A prestigious initiative in Kerala, the Integrated Financial Management System (IFMS) aims to integrate several stakeholders, including banks, the RBI, finance, and departments of

accounting, line and administrative functions, and finance, in order to modernize Treasury Systems. Major application modules are included in the project, including Core Treasury Savings Bank, e-Treasury, Budget Allocation and Monitoring System, CoreTIS, CRA for e-Stamping and Stamp Management System, Vendor Information and Management System, Integrated Accounts Management System, and User Management and Administration System. The NIC Kerala has created and executed multiple Application Modules for the Integrated Financial Management System (IFMS) Project. This has enabled seamless integration with multiple stakeholder applications, including SPARK, EMLI, GAINPF, Local Self Government Institutions Billing System, Accountant General's VLC System, RBI's e-Kuber, and more.

Integrated Financial Management and Information System in Telangana

As its name implies, IFMIS is a single, integrated platform designed to advance deep financial analytics, customized visual reporting, safe data management, and effective government financial management techniques. The goal of IFMIS development is to incorporate cutting-edge technology into financial operations, guaranteeing complete transparency, maximum efficiency, and greater data security. With the goal of transforming financial management, this system offers a solid foundation that adapts to the changing needs of the government.

Scope of Integrated e-Financial Management System Application

The quality of an organization's personnel as well as the structure it has put in place affects how effective it is. IFMS (Integrated Financial Management System) tries to establish a calm atmosphere in its operations so that work can be completed effectively. The performance of government employees is being adversely affected by a multitude of manual chores that take longer to complete and produce less effective work. A shift in the office's financial management culture might result in time savings that can be utilized to boost productivity within the company. The aim of this study is to ascertain the degree of necessity associated with the prompt implementation of integrated financial management to enhance departmental performance and foster a more agreeable work environment. This study aims to ascertain the importance of the IFMS application in government offices and the urgent necessity of putting it into practice in order to enhance departmental performance and foster a more tranquil work environment

Finance and Management Functions

Production, marketing, and other tasks are critical management functions. Finance and the other functions are inseparable from one another. The acquisition and usage of cash are involved in almost all company activities, whether directly or indirectly. The raising and use of capital for the finance function affects the other activities significantly, but it does not always restrict or limit how the organization is run overall. Financing decision-making, investment decision-making, and dividend decision-making are the terms used to describe the processes of

generating money, putting it into assets, and paying out returns to shareholders. While carrying out these tasks, an organization tries to maintain a balance between cash inflows and outflows. This is known as a liquidity choice.

Modules of Integrated Financial Management System

IFMS is a comprehensive financial system with various modules including budget, annual development plan, treasury, E-GRAS, ECS payments, pension, payroll, human resources, interface, letter of credit, fund management, financial data warehouse, e-status enquiry, e-audit, state public procurement portal, and Aadhaar-based payment. It offers various financial practices and transactions.

Source: https://ifms.raj.nic.in/webpages/default.aspx

A) Budget Module- Estimation, planning, and distribution of the budget are covered in this module. All departments use IFMS for the Budget Finalization Committee to electronically submit their plan and non-plan budget estimates to the finance department. The appropriate Finance Department expenditure section is reviewing these suggestions electronically. The system is generating BFC minutes following the finalization. Finalized data is provided to Finance's Budget Division after BFCs, where it is utilized to prepare budgets.

B) Annual Development Plan Module- Linking plan schemes with the appropriate heads of accounts is provided by this module. Unique coding has also been supplied, and plan schemes have been linked to the appropriate budget heads. This module also retains the option to integrate the system with the Central Plan Monitoring System. Departments submit their online proposals to the Department of Planning, which uses the system to determine the ceiling. Any modifications to the ceiling are announced via the system.

C) Treasury Module- All of Treasury's functions is covered in this module. The primary duties of 221 Sub Treasuries and all 39 Treasury have been moved to IFMS. Online bills from drawing

and disbursing officers are received by treasuries. Following system availability of the budget and other checks, treasuries and sub treasuries pass bills and upload electronic advice to fourteen banks. In response, banks are downloading these files and paying beneficiaries directly into their bank accounts. Treasury receives daily e-scrolls from agency banks and uses the method to compile monthly accounts. AG is downloading accounts from the internet and using the information related to challans and coupons. Every agency bank and AG in the system has access to an interface. Under the Treasury Module, the Stamps Module has also been launched. Here, you can access information on all stock entries, vendors, supply, and demand. Prior to the law being passed, the system verifies the availability of the budget. Online budget availability was met without going over budget; online account compilation and reconciliation were initiated; Monthly accounts are created via IFMS and sent to the AG office, where the availability of the budget is confirmed on a DDO basis. The Director of Treasuries, Accounts, and Finance Department can keep an eye on how Treasuries and Sub treasuries are operating on a daily basis and can generate a variety of reports regarding the receipt and use of state funds.

D) E-GRAS (Government Receipt Accounting System) Module- E-GRAS's primary goal is to make it easier for taxpayers to make payments whenever and wherever they want, with a variety of bank options available. In a similar vein, it serves as a location for the real-time maintenance of all appropriate computerized accounting and reconciliation procedures. Since there is no direct customer interaction at the bank counter when paying taxes online, the taxpayer does not need to provide a physical challan. All e-receipts have their challan details captured by the online banking system in the designated Templates. Since the challan details are being recorded electronically, the bank is sending the e-challan data to the e-treasury in order to expedite the transmission of revenues to the government account. Due to the ability to perform precise accounting based on the classifications found in the e-challans, this also makes reconciliation with the banks, Department, and Treasury easier. The system would also record all hard copy challans in an electronic format. The E-GRAS system offers the ability to generate challans via its website.

E) E- Treasury Module- The idea of e-treasury is hassle-free tax collection and, initially, paperless accounting and reconciliation for state governments. The e-treasury offers a single point of contact for all online tax money collected by the state government, together with e-payment and reconciliation capabilities. Every day, digitally signed e-scrolls are sent to the e-treasury. The gross monthly e-receipts are compared by the e-TO to the gross amount (head-wise) indicated in the DMS of the electronic receipts that the banks have sent. AG is receiving this reconciled e-account electronically from e-treasury. Under FD's direction, the e-treasury operates. The online e-receipt feature would be provided by eTreasury. The corresponding treasuries and sub treasuries conduct manual payments.

F) ECS payments Module- An essential component of IFMS is e-payment. The State Government of Rajasthan is paying for all government transactions online in accordance with directives from the Central Government of India. All agency banks are using NEFT/EFT to credit the payments into the appropriate accounts.

G) Pension Module- Both the Social Security Pension Module and the Civil Pension Module are covered. The online creation of PPOs and their submission to the Treasury is made possible by Civil Pension. First payments through the mechanism are being made by treasuries. Additionally, a bank scroll reconciliation feature has been added. A new module called Social Security Pension has been developed, allowing all Social Security pensioners' records to be accessed within the system. The relevant SDOs and BDOs issue sanctions using an online 29 system, which is then submitted to the relevant Treasury or Sub Treasury for pension distribution. Using this information, Treasury/Sub-Treasuries use the system to issue money orders.

H) Payroll and human resources module- To increase transparency in the salary bill system, an electronic payroll system has been implemented. It makes it easier to value government liabilities actuarially, provides comprehensive employee data, and offers a way to integrate with the Integrated Human Resource Management System (IHRMS) (database of employees and pensioners). This process involves about 19,000 DDOs and 5.50 lac employees. The system generates monthly salary bills, which are then submitted electronically to Treasuries and Sub Treasuries. These laws are being passed electronically by the Treasury, which is also providing banks with electronic guidance for electronic payment. Without the involvement of the DDO, banks are directly crediting salaries into the bank accounts of employees. This system offers an employee login feature that allows employees to check their wage details. DDOs have received a variety of reports for daily updates. They have easy access to their salary bill payment and rejection history.

I) Interface Module- Interface to external users such as RBI, AG office, and Agency Banks is provided by this module. Beginning in June 2011, an interface has been made available to all agency banks for the purpose of submitting daily payment and receipt scrolls to Treasury and Sub Treasury. Since the implementation of electronic payments, the files that Treasury uploads to the system are downloaded every day by all agency banks. Banks can log in securely using digital signatures to access the system. They use electronic payment methods and update the IFMS website with payment status information.

J) Letter of Credit Module It will make it possible to collect spending information from Public Works Departments that don't use the Treasury system for their transactions. This module is being developed and will be released soon. The Public Works Departments' budget control will remain intact following the installation of this module. The government has real-time access to the entire expenditure picture. The Letter of Credit Module gives all public works departments

the ability to allocate funds, spend money, and electronically submit their monthly accounts to the AG. Cheque payments will be entirely transferred to electronic payment methods. Digital signatures, such as Treasury, may be made available to all divisions for the aim of enabling them to send digitally signed files to banks.

K) State Public Procurement portal- The State Public Procurement Portal is being created following IFMS, the Rajasthan Transparency in Public Procurement Act, 2012, standards. This site includes Zila Parishads, Panchayat Samities, Gramme Panchayats, Municipal Corporations, Municipalities, Autonomous Bodies, and Boards in addition to all departments and their offices. This portal is open to the public for publishing items related to public procurement. There will be a future connection between this portal and the e-Procurement portal.

L) e-Payment under e-Procurement - All state government agencies, including Public Sector Undertakings (PSUs), use a single, unitary, end-to-end system that the government of Rajasthan implemented with the aim of enhancing efficiency and transparency in public procurement through the implementation of a comprehensive e-Procurement solution. On behalf of the Government of Rajasthan (GoR), DoIT & C would treat all state government departments, public-private businesses, etc. as users (organizations). To lessen the necessity for manual interventions and to establish a transparent system for tender processing, GoR has felt the need for an electronic payment system for the deposition of tender fees, EMD, and RISK processing fees.

M) Aadhaar Based Payment Module - The Direct Benefit Transfer Scheme, which uses an Aadhaar-based system to facilitate direct cash transfers to beneficiaries' bank accounts, was recently introduced by the Indian government (ABS). The Beneficiary's bank account number must be seeded with the Aadhaar number, and the file must be uploaded to the NPCI system via the Sponsor Bank, according to the ABS. For additional payments made through NPCI, the User Department must provide the Sponsor bank with an electronic beneficiaries' list that includes the Aadhaar Number, Amount, and User Reference Number.

N) Stamps Module- The Stamps Module was put into place with the intention of increasing transparency in Treasury stamp issuance and stock entry. For centralized monitoring of Stamps from IG, Registration, and Stamps as well, this system offers a single solution. The Treasury now has the capacity to keep an up-to-date database of stamp stock.

P) Financial Data Warehouse Module- A central server would process the data produced by each module for a variety of MIS reports. To give the line departments access to a variety of financial information, the processed data will be made available on the INTERNET and INTRANET in the form of a MIS portal.

Q) Other Modules Under IFMS, additional modules are being developed, including e-Audit, e-Status inquiry, Fund Management Module, Master Management, and PD Account Modules.

IFMS 3.0 New Version of IFMS

The Integrated Financial Management System (IFMS), created by NIC, oversees state financial management. Budget, payments, expenditure, reception, works management, and accounting are all covered by the comprehensive suite of financial tools known as IFMS. Presenting budgets electronically in the State Assembly is now possible thanks to the system, which saves approximately 50 lakh pages annually. The budget preparation and estimation process, which is delivered electronically to all DDOs, has significantly reduced effort and time. Every year, social security retirees who get direct benefit transfer (DBT) save around Rs. 300 crores. The state government provides the AG with digital copies of all of its accounts, complete with vouchers. Every year, this saves 2.5 crore sheets, as well as the time and expense associated with making copies. Integration with the RBI's e-Kuber saves the government around Rs. 100 crores. Duplicate payments to the Social Security Pension System have been stopped thanks to Aadhaar. Every employee's salary and Social Security pension are processed entirely automatically, requiring no human involvement. This has enhanced service delivery and significantly reduced the effort required to process salaries and pensions. With a cap on the available funds, all A & F sanctions for works are produced and issued electronically. With the implementation of budget management for treasuries, the potential for overpayment has vanished. Additionally, all employees' civil pensions are automated. Numerous applications from various departments have been integrated with different IFMS modules. 42 banks have merged with the eGRAS system, which is utilized for government receipts. All stakeholders have access to real-time data on all receipts and expenses through the IFMS. Mobile apps are available to support it for a number of features.

Source:https://ifms.rajasthan.gov.in/ifmssso/#/about

To better financial management and expedite procedures for government employees and other stakeholders, the Finance Department of the Government of Rajasthan is currently

planning and implementing the Integrated Financial Management System (IFMS 3.0). Budget management, expense management (disbursement engine) with treasury operations, revenue management, accounting, and reporting are all included in IFMS 3.0, an integrated system. By consolidating all of the prior disconnected modules into a single, cohesive system, removing superfluous steps, and incorporating new features like stakeholder self-service, this new system seeks to address the problems associated with the earlier components. The Government of Rajasthan's Finance Department's financial management will be much improved by the IFMS 3.0 system, which will also make it easier for all stakeholders to utilize.

Main Utilities of IFMS 3.0 Application

Budget Management includes all steps involved in estimating, preparing, and finalizing a budget, as well as budgetary punishments, reappropriation, extra authorization, surrender, etc.

Revenue Management allows for the online, offline, and manual collection of tax and non-tax revenue, as well as the processing of all revenue receipts.

Disbursement Engine includes Treasury Management (including sanctions, bills, and payments), Payee Management, Employee Management, Pension Management, Works, and Bank Disbursement Engine (for non-treasury activities).

Accounting Management includes all procedures involved in compiling accounts and submitting them to AG (via IM server integration). general revenue and expense accounting, RBI-DN/RN, bank scroll management, AG reconciliation, etc.

Employee Management System- A company's ability to effectively manage its personnel depends on its employee management system. The Employee Management & Salary Bill training manual aims to make it easier for trainers to comprehend how to alter the migrated employee data from IFMS 2.0, as well as how to create new workers and groups where employees will be tagged for salary bill purposes. By connecting the salary bill generation process with other related processes like subsistence allowance, allowance, deduction, etc., which are used to generate these bills, this training manual will also help master trainers better understand how the system works and how it will help users generate salary bills. The employee's salary bill will be generated using the information stored in the employee management module.

Pension Module - It is an all-inclusive system that takes care of an employee's or pensioner's needs in relation to retirement. The module provides a number of functions to stakeholders, such as processing pension bills and sanctions, income tax statements, and a pension calculator. Employees can simply manage their retirement and choose their pension plans by using this service. From a commercial standpoint, the Pension module offers a centralized platform for handling all of the requirements of independent contractors, such as payments, regulatory compliance, and administration of pension plans. Employees benefit from a streamlined pension

process that increases efficiency and lowers errors. In general, the Pension module is a crucial resource for an Employee who wants to confidently and easily manage their retirement.

Significance of Integrated Financial Management System (IFMS 3.0)

IFMS 3.0 (Integrated Financial Management System) is software designed to streamline daily financial operations in government offices and treasuries in Rajasthan. It offers a wide range of solutions, such as budget management, revenue management, disbursement engine, accounting management, and more, which facilitate fast flow and easy access from any location. The application also allows for quick approval and tracking, making financial data storage easier with convenient access. This study examines the effects of IFMS 3.0 application deployment on time management, productivity, workplace atmosphere, improved storage, and ease of use. Results show that IFMS 3.0 is superior to traditional office software in terms of time savings, ease of use, storage upkeep, and overall workspace enhancement. However, the lack of training among government employees may have led to some respondents' disapproval. The fundamental goals of IFMS 3.0 in Rajasthan Govt.'s Offices—transparency, accountability, responsiveness, and efficiency—are achieved in the present. Time savings and a comfortable workplace can increase a department's total productivity. More research is required to understand the implementation and application approach and its impact on improved office/department performance, facilitating the attainment of goals of good governance. It is proposed that autonomous bodies, public sector units, grants-funded organizations, and small offices under the government of Rajasthan should use IFMS 3.0 to increase financial efficiency. The project intends to manage better cash flow, provide a better interface with the RBI, Agency Banks, and Accountant General, address data and transaction security to increase accountability and transparency in financial operations, improve the Treasury system, remove redundancies and integrate data, and ensure effective control over budget and quick availability of data.

Role and Functions of Drawing & Disbursing Officers (DDO) in Government Office

A disbursing officer is a head of office or any gazetted individual appointed by a central government department to draw up invoices and pay bills on the government's behalf. Any subordinate officer may be given permission by the head to sign a bill, and he may also direct him to send the officer's name and specimen signature to the relevant disbursing office. Nevertheless, this does not absolve the office head of accountability for the correctness of the invoice or the handling of the funds received as payment. Disbursing officers (DDOs) come in three varieties: the non-cheque drawing DDO, the cheque drawing DDO, and the integrated DDO. DDOs with non-cheque drawing processes draft and send their invoices to the Principal Account Office (PAO). Certain DDOs that have no residence at the same station as the PAO have been given the authority to draw checks. Pay and allowances, wages, medical claims, honoraria, long-term care (LTC), travel costs, office contingencies, and other regular expenses

are among the items that CD DDOs pay. In addition, they make short-term loans, GRD withdrawals from GPF, advances from GPF payments, and time-based allowances. The first steps after being appointed as a DDO are submitting sample signatures to the PAO or bank, assigning DDO codes, assigning TAN from ITO responsibility related to income tax, appropriately recovering unpaid income, filing quarterly returns to ITO, and providing salary certificates to employees. He is in charge of revenue receipts, money withdrawal, disbursement, spending management, account record upkeep, GPF account, and reconciliation. He is in charge of revenue receipts, money withdrawal, disbursement, expenditure control, upkeep of accounts registers, GPF account, reconciliation accounts with PAO expenditure control, keeping a register in form GFR-9, sending monthly expenditure figures to the controlling officer by the third, accurately classifying bills, recording progressive totals on each bill, safekeeping of cash, upkeep of cash books, embedded cash chest, duplicate key register, and maintenance of various registers.

Changing Role of Drawing & Disbursing Officers (DDO)

The information era has provided new insight into the function of DDO and public financial management. In government offices, the positions of Chief Account Officer (CAO) and Financial Adviser (FA) have become increasingly important. They serve as a driving force behind the creation of an atmosphere where self-managed teams enable public organizations to thrive. The FA or CAO needs to change from being a back-office manager to a front end organizer and leader. This involves dedicating more time to networking, doing environmental analysis, coming up with strategic plans, and overseeing and safeguarding financial flows. The function of the FA or CAO will eventually transition from an operational to a strategic one. Naturally, the CAO cannot be relieved of his backend responsibilities from an operational standpoint. Understanding public funds productivity and cost of funds, as well as human resource initiatives and competitive environment analysis, are among the knowledge needed for becoming a CAO. In order to focus on the broader scope of all business components that rely on or are influenced by finance, he must acquire general management abilities.

Let Us Sum Up

The basic understanding of integrated e-financial management systems, which have been adopted recently in the public sector, has been examined in this chapter. We covered a number of significant integrated electronic financial management system issues in this chapter. We looked at the integrated financial management system (IFMS), which is an important concept. Additionally, it has been mentioned that the Integrated Financial Management System (IFMS), a web-based platform, was developed to automate a number of crucial government financial accounting procedures, including treasury, distribution and allocation, estimate creation, and budget planning.

The main focus of an integrated e-financial management system is how a public sector organization gets funding and uses it in the modern environment. Financial management has a broad range of responsibilities, from budgeting to making decisions about investments and financing. We also learnt that the role of the Drawing and Disbursing Officer extends beyond the mobilization and deployment of funds; in addition, he plays a critical role in the formulation of strategies, assisting upper management in their decision-making, and providing support and information to other departments such as accounting, credit, cash, data processing, and tax on a daily basis. We have even studied about the utilities or modules of integrated e-financial management system (IFMS) like Budget Module, Annual Development Plan Module, Treasury Module, E- GRAS Module, ECS payments Module, E- Treasury Module, Pension Module, Payroll and human resources module, Interface Module, Letter of Credit Module, Fund Management Module, Financial Data Warehouse Module, E-Status enquiry, E-Audit Module, State Public Procurement Portal, Aadhaar Based Payment Modul. By the time this chapter ends, readers will have learnt a great deal about the IFMS and had a sufficient introduction to the topic.

References:

1. Njonde, J. N., & Kimanzi, K. (2014). Effect of integrated financial management information system on performance of public sector: A case of Nairobi County Government. International Journal of Social Sciences and Entrepreneurship, 1(12), 913-936.
2. Hendriks, C. J. (2012). Integrated Financial Management Information Systems: Guidelines for effective implementation by the public sector of South Africa. South African Journal of Information Management, 14(1), 1-9.
3. Banerjee, A., Duflo, E., Imbert, C., Mathew, S., & Pande, R. (2020). E-governance, accountability, and leakage in public programs: Experimental evidence from a financial management reform in India. American Economic Journal: Applied Economics, 12(4), 39-72.
4. Caba Pérez, C., Pedro Rodríguez Bolívar, M., & López Hernández, A. M. (2008). E-Government process and incentives for online public financial information. Online Information Review, 32(3), 379-400.
5. Sengupta, D., & Shastri, N. (2019, April). Digital Payments through PFMS-Facilitating digital inclusion and accelerating transformation to a Digital Economy'. In Proceedings of the 12th International Conference on Theory and Practice of Electronic Governance (pp. 196-201).
6. Bandy, G. (2023). Financial Management and Accounting in the Public Sector. Taylor & Francis. http://books.google.ie/books?id=4o-

nEAAAQBAJ&printsec=frontcover&dq=financial+management+in+public+sector&hl=&cd=5&source=gbs_api

7. Bergmann, A. (2009). Public Sector Financial Management. Pearson Education. http://books.google.ie/books?id=XQSHZKP8r1YC&printsec=frontcover&dq=Financial+Management+and+Accounting+in+the+Public+Sector&hl=&cd=2&source=gbs_api
8. Blokdyk, G. (2019). Integrated Financial Management A Complete Guide - 2020 Edition. 5starcooks. http://books.google.ie/books?id=8jjdyQEACAAJ&dq=integrated+financial+management&hl=&cd=4&source=gbs_api
9. Gcora, N., & Chigona, W. (2019). Post-implementation evaluation and challenges of Integrated Financial Management Information Systems for municipalities in South Africa. South African Journal of Information Management, 21(1). https://doi.org/10.4102/sajim.v21i1.1066
10. Odoyo, F. S., Adero, P., & Chumba, S. (2014). Integrated Financial Management Information System and Its Effect on Cash Management in Eldoret West District Treasury, Kenya. http://41.89.101.166:8080/xmlui/handle/123456789/4065
11. https://finance.rajasthan.gov.in/PDFDOCS/OTHERS/Compendium10004.pdf
12. https://finance.rajasthan.gov.in/PDFDOCS/TA/13555.pdf
13. https://ifms.raj.nic.in/webpages/default.aspx
14. https://pfms.nic.in/Home.aspx
15. https://ifmis.telangana.gov.in/login
16. https://www.ifms.kerala.gov.in/

CHILD MARRIAGE - ITS CAUSES, CONSEQUENCES, AND PREVENTIVE MEASURES

Mubashra Yesmin
Department of Education,
Pandit Deendayal Upadhyaya Adarsha Mahavidyalaya, Amjonga, Goalpara, Assam
Corresponding author E-mail: mubashra399@gmail.com

Abstract:

Child marriage is a pervasive global issue with severe impacts on girls' physical, social, and educational well-being. This practice, involving marriages before age 18, undermines girls' health and future prospects, often perpetuating cycles of poverty and inequality. Despite legal reforms, child marriage remains prevalent, particularly in Sub-Saharan Africa, South Asia, and parts of the Middle East. Major causes include poverty, gender inequality, lack of education, and traditional customs. Consequences include human rights violations, health risks, domestic violence, and mental health issues. Preventative measures involve enhancing girls' education, providing economic support, engaging communities, and enforcing supportive laws. Comprehensive strategies addressing these areas can empower girls, delay marriage, and foster equitable societies. By integrating educational, financial, and legal approaches, we can create an environment where girls have the opportunity to achieve their potential and avoid the constraints of early marriage.

Keywords: Child marriage, Community Engagement, Awareness, Domestic Violence.

Introduction:

Child marriage is a global social problem that has far reaching impact on the lives of children specially girls under the age of 18. Child marriage possesses a far reaching impact on physical, social, mental, and educational status of the girls. Child marriage is a cultural or social process of marriage of individuals (girls) below the age of 18 to a minor boy or an adult. Child marriage curtails the freedom of a girl and destroys her childhood abstaining her from enjoying the golden age of life, deprives from pursuing education and greatly impacts her physical health. According to United Nations International Children Emergency Fund (UNICEF) despite a steady decline in the harmful practice of child marriage over the past decades it has remained widespread with approximately one in each five girls getting married in their childhood across the world. Child marriage robs girls of their rights and threatens their childhood. Child marriage often results due to gender inequality; lack of awareness and education, stereotype, social norms, cultural traditions, economic factors etc. girls below the age of 18 getting married often becomes pregnant at very early age which leads to severe fatal health complications imposing a risk on the

life of the mother as well as the child. Child marriage is considered as violation of human rights and is illegal in many countries which have severe punishments and penalties. In many ancient civilizations, marriage at a young age was prevalent and common with an intention to transfer wealth, strengthen alliance or to make settlements. Girls were typically used as objects of mediation or as a chain of connection. During the period of industrial revolution leading to various social changes, attitude towards child marriage began to change in the west and emphasis was given more on education and child welfare. Despite the introduction of various legal reforms and laws, child marriage is persistent in many nooks and corners of the world particularly in the Sub- Saharan Africa, South Asia and parts of the Middle East. In India, the practice of child marriage was first legally prohibited in 1929 through the "Child Marriage Restraint Act 1929". This act was amended in 1978 to prescribe 21 & 18 years as minimum age of marriage for male a female respectively. In 2006 a new act The Prohibition of Child Marriage Act came into force repealing the earlier act. Recently, in the year 2021, an amendment bill was introduced to increase the minimum age of marriage for the females from age 18 to 21 and the bill is presently referred to the standing committee and is still pending in status. If this act is passed, the minimum age for marriage in India for both girls and boys will be 21.

Nagaland and most of the North- East states had no cases of child marriage from the year 20126-2020 even as such cases has witnessed an upward trend in other parts of the country according to the data provided by- Union Ministry of Women and Child Development. According to the data based on National Crime Records Bureau (NCRB) report says that only Assam and Tripura had Cases of Child Marriage in North-East. While Tripura records 7 cases and Assam with a great number of 422 was the 2nd highest among the other States and Union Territories of the country. In the year 2020, Assam recorded a number of 138 cases while there were 115 in 2019 showing an considerable increase in the number.

Major Causes of Child Marriage in North-East India

Child marriage is more of a social practice in certain parts of the world. Though it is illegal and has severe consequences such as imprisonment, people tend to carry on such practice in the name of culture, tradition and social norms. In North East India due to the presence of various Tribal Communities who practice child marriage as a cultural tradition and norm, the rate has not yet decreased concerning such practices. Some of the major factors leading to child marriage are as follows-

- **Poverty-** One of the major and burning cause of child marriage is poverty. Families with low income generally tend to marry off their daughters at a very early age to reduce the burden and cut off expense. Girls are generally considered as economic burden and liability therefore, parents prefer them to marry at early age to interested grooms.

- **Avoid Increase in Demand for Dowry**- Generally, girls are considered as "Parayadhan" and therefore, parents do not will to invest more in girls rather they prefer to marry off their girls as soon as they attain puberty as girls of tender age does not require more dowry for marriage.
- **Gender Inequality**- Many parents are of the view following from social rules and customs that investments in girls are not worthy as they have to marry and leave the family serving the husbands family. Therefore, in many societies, education and investments made for their boy's career are given more importance or emphasis. Therefore, girls are not given necessary opportunities and are forced to be married at an early age.
- **Lack of Education and Awareness-** Families and parents who have not received education and are consequently not aware of the adverse effect of child marriage on the overall health and life of their daughter tends to marry off their daughters at a very early age considering it to be very normal.
- **Traditional Beliefs and Customs**- Cultural beliefs and customs continue to promote child marriage in countries like India and Middle East. People tend to belief that early marriage can ensure safety and security of their girls. Girls who are ought to be married lately are generally questioned upon their purity. Therefore, to protect their prestige and family lineage, girls are preferred to be married at an early age.
- **Inadequacy in Enforcement of Laws And Policies-** Though there are presence of various laws and policies concerning prohibition of child marriage in national as well as international level, their implementation is not yet up to the marks for which the aims of rooting out acts like child marriage is not yet achieved.
- **Lack of Opportunity For girls-** The girls are generally deprived of their rights towards education and exploration of their talents. They are generally compelled to engage in house chores and look after their sibling that makes them incapable of raising a voice against injustice and no ways left than being puppets of their parents will.
- **Avoid Share in Ancestral Property-** People generally has a mindset that a girl does not have any right upon their ancestral property and the whole property belongs to their male child who will look after the parents and family for a lifetime. Therefore, parents with such typical mindset prefer to marry their girls at an early age so that they do not demand for property rights.

Consequences of Child Marriage

Girls being victims child marriage experiences various issues ranging from physical, social, emotional, economic and educational aspects. They are likely to experience brutal

domestic violence, rob off their childhood and rights of education. Some of the major consequences are discussed below-

- **Violates Human Rights-** Every child being born as a human being deserves a right to develop his potentialities and enjoy his/her rights in all aspects. But child marriage curtails and robs the child (especially the girls) from enjoying their basic rights, independence and fulfilling their dreams and goals.
- **Lower Status in Society-** Child marriage often leads to lower status of girls in society by curtailing their right to education, abstaining from economic independence and exposing them to domestic violence and fatal health risks. Girls therefore, tend to lose their respect and dignity due to such practice.
- **Domestic Violence-** Girls married early usually tend to experience the terror of domestic violence from their older spouse as they are usually less educated, economically dependent, and possess limited power and autonomy. These girls might experience emotional abuse, sexual abuse, and physical abuse from their partners.
- **Health Risks-** Young Brides lacks sex education and are at higher risk of complications during pregnancy and child birth which leads to an increased material and infant mortality rates. Young mothers even have higher risk inclination towards sexually transmitted disease and infections like HIV, AIDS etc.
- **Mental Health Issues-** Girls who a married early needs to face various forms of Challenges at different stages of life. They are totally robbed of their childhood and innocence which leads to emotional and social distress and they are more prone to experience depression, anxiety, frustration, loss of confidence etc. in life.

Preventive Measures Towards Child Marriage-

Addressing the problem of child marriage requires multifaceted and comprehensive effort, including grassroots level to higher levels of policy making and implementations including legal reforms, education of girls, empowerment of women, community-based initiatives, etc. Some points for the same are highlighted below-

- **Empower girls with information, skills and support networks-** Encouraging females with knowledge, abilities, and a network of support is essential to avoiding child marriage. Girls with more education are better able to recognize their rights and make wise decisions about their futures. Developing their skills makes them more employable and less likely to marry young as a means of making ends meet. A robust support system, comprising mentors and community allies, offers direction and advocacy, assisting girls in defying social pressure to enter into early marriage. We build a strong framework that empowers girls to pursue their goals and postpone marriage by funding education, career

training, and community support networks, eventually promoting their autonomy and well-being.

- **Provide economic support and incentives to girls and their families**- Economic support and incentives for girls and their families can help avoid child marriage. Girls are empowered to pursue education and develop their talents through financial help, scholarships, and vocational training, which provide them with viable alternatives to early marriage. Economic support lessens the incentive for families to marry off their daughters in order to relieve financial strain. To further motivate families to invest in their daughters' futures, conditional monetary transfers and other incentives linked to delayed marriage or school attendance can be implemented. This all-encompassing strategy fosters environments where girls can thrive and postpone marriage by addressing both the short- and long-term needs.
- **Educate and rally parents and community members-** Preventing child marriage requires community members and parents to be mobilized and educated. Campaigns for awareness and community initiatives can question established beliefs and emphasize the advantages of postponing marriage and education. Communities can change attitudes and behaviours by educating parents about the long-term benefits of keeping girls in school as well as the risks to their health and legal status that come with getting married young. Activating influential people and local leaders to oppose child marriage fosters a climate that is conducive to change. Collaborative initiatives aimed at educating and engaging entire communities cultivate a shared commitment to upholding girls' rights and guaranteeing their prospects for a better future.
- **Enhance girls' access to a high-quality education**- Improving girls' access to first-rate education is a highly effective way to stop child marriage. A good education gives females the information, abilities, and chances that increase their possibilities for the future and lower the chance of marrying young. Girls who receive a high-quality education not only develop critical thinking and problem-solving skills but also experience an increase in self-assurance and goals. Schools give females a safe haven and network of support, which keeps them interested in and driven to finish their education. Communities may provide girls with viable alternatives to early marriage and support their long-term well-being by enhancing educational resources and making sure that schools are inclusive and accessible.
- **Encourage supportive laws and policies-** In order to stop child marriage, supportive legislation and policies must be promoted. Early marriages may be discouraged by legislation that establishes a minimum legal age of marriage and imposes severe penalties for infractions. Financial incentives, legal protection, and policies that assist girls'

education all contribute to the development of an environment that uplifts and promotes young women. Girls are also given the help and protection they need from forced marriages because to extensive child protection legislation and easily available legal remedies for victims. Society can build a solid foundation for defending girls' rights and futures by supporting and enacting such laws and policies.

Conclusion:

Child marriage is still a major problem in the world today, with far-reaching effects on young girls' lives and prospects. This practice, which frequently entails marrying off girls before they reach maturity, harms the girls' education, health, and personal growth while sustaining cycles of inequality and poverty. To tackle this problem, a multimodal strategy that includes law reform, community involvement, financial assistance, and education is needed.

Facilitating girls' access to a top-notch education is one of the best ways to fight child marriage. Girls who receive an education are given the necessary information, abilities, and chances to delay marriage considerably and pursue rewarding occupations. In addition to academic instruction, schools provide females with a secure atmosphere in which they can develop their self-esteem and resilience. Communities may support girls in envisioning and realizing a future free from early marriage by guaranteeing that education is both high-quality and easily accessible. Incentives and financial support for families are also quite important. The financial pressures that frequently result in early marriage might be lessened with the help of financial aid, scholarships, and programs for vocational training. Families are more inclined to invest in their daughters' education and future when they perceive feasible alternatives to marrying off their daughters as a way to alleviate financial pressure. More financial incentives, such as conditional cash transfers, can persuade families to put girls' education first and put off marriage.

Educating and involving parents and community people is equally vital. Community initiatives and awareness campaigns can question outmoded beliefs and emphasize the advantages of postponing marriage. Through the engagement of local leaders and influencers in advocacy initiatives, communities can work together to change attitudes and behaviors that encourage child marriage. For long-term reform to occur, an atmosphere that respects and upholds girls' rights must be established.

The prevention of child marriage is mostly dependent on supportive laws and policies. It is imperative to establish and implement legal frameworks that safeguard girls who are vulnerable and establish a minimum marriage age. Enough legal remedies for victims and comprehensive child protection legislation guarantee that girls have the support they need to refuse and avoid forced marriages. Policies that support girls' economic and educational opportunities also support the larger goal of putting an end to child marriage.

Finally, avoiding child marriage necessitates a comprehensive approach that considers educational, economic, social, and legal aspects. By making educational investments, offering financial incentives, involving communities, and passing legislation that support them, we can foster an atmosphere in which girls feel empowered to follow their own paths and ensure a future free from the obligations of young marriage. In addition to helping individual girls, this group effort promotes societies that are healthier and more just.

References:

1. Lal, B. S. (n.d.). Child marriage in India: Factors and problems. *International Journal of Science and Research (IJSR)*. Retrieved from ISSN (Online): 2319-7064
2. Nasrullah, M., *et al.* (2014). Child marriage and its associations with controlling behaviors and spousal violence against adolescent and young women in Pakistan. *Journal of Adolescent Health*.
3. Godha, D., *et al.* (2013). Association between child marriage and reproductive health outcomes and service utilization: A multi-country study from South Asia. *Journal of Adolescent Health*.
4. Raj, A., *et al.* (2009). Prevalence of child marriage and its effect on fertility and fertility-control outcomes of young women in India: A cross-sectional, observational study. *The Lancet*.

FORECASTING ARRIVAL AND PRICE OF ONION IN SELECTED MARKETS OF BALANGIR DISTRICT OF ODISHA BY USING MACHINE LEARNING TECHNIQUE

Devidutta Behera and Abhiram Dash*

Department of Agricultural Statistics, College of Agriculture, Bhubaneswar

Odisha University of Agriculture and Technology

*Corresponding author E-mail: abhiramouat@gmail.com

Abstract:

Onion is a vital staple in global diets, making its price fluctuations a significant concern for consumers, traders, and policymakers. Research on arrival behavior and price can help policymakers create the best agricultural policies to reduce price volatility and give farmers the information they need to adjust cropping patterns and dispose of their products at the best location and time for a profit too. The data regarding arrival and price of onion crop has been collected from the Balangir, Tusura and Kantabanji market of Balangir which is a high producing district of Odisha with respect to onion crop for the period from 1st April 2022 to 31st march 2024. Machine Learning models are fitted to the data on arrival and prices of onion which could take care of non-linearity in the data. ANN models with different nodes at hidden layer are fitted to the data after eliminating the outliers in the data. Model diagnostics test such as Box-Pierce test and Shapiro-Wilk's test are done to check whether the independency and normality assumption of errors are met with. The models satisfying the error assumption test are considered for selection to be used for forecasting. The best model among the selected ones is found by considering the value of model fit statistics such as, Root Mean Square Error (RMSE) and Mean Absolute Percent Error (MAPE). The model having lowest RMSE and MAPE is selected to be the best fit model. NNAR (1,4) and NNAR (7,4), NNAR (6,4) for arrival and NNAR (1,2) and NNAR (1,2) and NNAR (9,5) for price in Balangir, Tusura and Kantabanji market of Balangir district are found to be the respective best fit models for forecasting. The forecasted values of both arrival and price of onion of the selected markets of Balangir are found to be decreasing with time with ups and downs at different intervals.

Keywords: Arrivals, Forecasting, NNAR, Prices

Introduction:

The management of onion crops is at high risk because they are only abundantly available in short spells, which is coupled with the problems of storage, transportation and the consequent postharvest losses. Hence, it poses a challenge to marketing the produce (available at: www.nhb.gov.in, accessed March 20, 2020) and wide price fluctuations in the market. Hence

volatility of onion crop prices causes a chaos in the households of this country. Onion is one of the commercial and most profitable crops among the vegetables and it is the 2nd most cultivated vegetable in area and production after potato. Onion has become an almost indispensable part of the Indian diet. Onion prices experience very high volatility due to perishable in nature and creates ripples in the trade. Onion price fluctuations are occurring all over Indian markets and they are causing damage to both onion producers and consumers.

Fluctuation or instability in prices is the greatest source of risk next only to weather in agricultural production system and this fluctuating characteristic of agricultural prices enter directly in the decision frame of farmers, both in production and marketing (Naidu and Kala, 2016).

Balangir is a high producing district of Odisha with respect to onion crop. The three important markets of Balangir namely, Balangir, Tusura and Kantabanji are studied for arrival and prices of Onion.

The most widely used traditional statistical model for forecasting price levels is the ARIMA model. The main limitation of ARIMA model is pre assumed linear relationship of the data series at hand which is generally unknown. Neural networks are good at input and output relationship modelling even for noisy data. The greatest advantage of a neural network is it's ability to model complex nonlinear relationship without a priori assumptions of the nature of the relationship. Because of its heavy reliance on biological processes, agricultural price forecasting is one of the more difficult time series analytic applications (Choudhury *et al.*, 2019).

Najafi *et al*. (2007) predicted wholesale prices of tomato, onion and potatoes in Fars Province, Iran, using Artificial Neural Networks (ANN) and common forecasting methods. Choudhary *et al.* (2019) Studied using an empirical mode decomposition based neural network model that is employed for potato price forecasting.

Material and Methods:

The study period comprises 1st April 2022 to 31st March 2024. The data for the time period pertains the arrival and price of onion in the selected markets of Balangir districts of Odisha. The quantum of information about the arrivals and prices of the previous 2 years (2022-2024) for the crop under study have been collected from the agricultural marketing information network (AGMARKNET) website (http://agmarknet.gov.in) and thus the study is based on the secondary data that has been collected. The following packages of R software are used for data analysis –t series (Trapletti and Hornik, 2022) and forecast (Hyndman and Khandakar, 2008).

The Artificial Neural Network (ANN) otherwise called neural network (NN), is a data-driven, self-adaptive, nonlinear and non-parametric statistical method. ANN functioning is as similar to the human brain and in recent times, it becomes a powerful tool for modelling, especially when the underlying data relationship is not known.

The primary artificial neural network topologies can be categorized according to the layer composition, neuron placement, and interconnection. They are listed in the following order:

1. Single-layer feedforward network: This architecture consists of a single layer of neurons that are connected to the output layer. The input layer is not present in this architecture.

2. Multilayer feedforward networks: Consists of multiple layers of neurons that are connected to the output layer. The input layer is present in this architecture.

3. Recurrent networks: This architecture consists of feedback connections between neurons, allowing the network to process sequential data.

4. Mesh networks: This architecture consists of neurons that are connected to each other in a mesh-like structure.

Neural networks

According to McCulloch and Pitts (1990), neural networks are computerized networks made up of interconnected basic processing neurons that are designed to emulate the functioning of the brain's central nervous system. Non-linear data is modeled using artificial neural network (ANN) modeling to address issues for which traditional statistical techniques are unsuitable. An input layer, an output layer, and typically one or more hidden layers make up the basic neural network architecture. Nodes at each layer are interconnected. Every connecting link has a weight that amplifies the sent signal. Next, an activation function is applied by each neuron to establish its net input and produce an output signal.

The relationship between the output y_t and the inputs (y_{t-1}, $y_{t-2, \ldots}$ y_{t-p}) can be mathematically represented as

$$\mathbf{y_t = f}\left(\sum_{j=0}^{q} w_j g\left(\sum_{i=0}^{p} w_{ij}\, y_{t-i}\right)\right)$$

where, w_j and w_{ij} are model parameters, called as connection weights. (i=0, 1, …p and j=0, 1, …q). p = no of input nodes, q = no of output nodes, g = activation function at hidden layer, f = activation function at output layer.

A range of architectural designs with distinct functionalities and differing numbers of hidden layers are employed to identify the optimal model, that maximizes network performance. While in backward propagation the network uses the gradient descent algorithm to try to reduce the error, in forward propagation they learn the data and give the nodes weights. There are two distinct sets of data: a training set and a testing set. To develop the model, the first 80% of the data are utilized as training data. At the end of the term, test data made up about 20 percent of the total data. The nonlinearity in the data series is tested using Terasvirta's neural network test for nonlinearity for the time series data. Terasvirta test is used for neural network model and the parameter values of the neural network model are based on Taylor expansion (Mahdiloo *et al.,* 2018). The significant p – value indicates non-linearity in the data.

Model diagnostic test: The assumption of independency and normality of errors are tested by using model diagnostic test.

The following tests are used:

(1) Box-Pierce test

The independence of the residuals is examined using the Box-Pierce test. The following provides the Box-Pierce Q-statistics:

$BP\ (k) = \sum_{k=1}^{n} \rho^2\ a.k$

Where, ρ2a.k is the autocorrelation coefficient at lag k of the residuals a_t, n is the number of terms in differenced series and K is the maximum lag being considered.

(2) The Shapiro-Wilk test

The Shapiro-Wilk test determines if the time series data' residuals are normally distributed. The Shapiro-Wilk test examines whether a sample of size x_1, ..., x_n originated from a population with a regularly distributed population. The alternative and null hypothesis is provided by:

H_0: The residuals are normally distributed.

H_1: The residuals are not normally distributed.

The test statistic is

$W = \frac{(\sum_i^n a_i x_i)^2}{\sum_i^n (a_i - \bar{x})^2}$

Where x_i's are the sample values, a_i's are coefficients of corresponding sample values and $\bar{x}$ is the sample mean which is given by (x_1+x_2+.... +x_n)/n Data sets with a p value higher than the 0.05 alpha value demonstrate that the data are from a normally distributed population and fail to reject the null hypothesis.

Model fit statistics: The selected models are compared on the basis of model fir statistics

(1) Model evaluation:

The important model evaluation techniques i.e. model fit statistics used for evaluation of non-linear models are Root mean squared error (RMSE), Mean Absolute Percentage Error (MAPE) (Wu *et al.*, 2019). RMSE, MAPE are explained as:

(2) Root Mean Square Error (RMSE)

A statistical metric called the root mean square error (RMSE) calculates the average difference between a model's predicted values and the dataset's actual values. It is frequently used to evaluate how well a regression model fits a dataset. It is computed as the square root of the residuals' variance. A model's ability to "fit" a dataset improves with a lower root mean square error (RMSE). Put differently, RMSE indicates the degree of data concentration around the line of best fit. Model selection has also made advantage of it.

Mathematically RMSE = $\sqrt{\frac{\sum_{i=1}^{n}(y_t - \hat{y}_t)^2}{n}}$;

Mean Absolute Percentage Error (MAPE)

A statistical indicator called mean absolute percentage error (MAPE) is used to assess how accurate a forecasting technique is. It is computed as the average of the absolute percentage errors between the actual and anticipated values at various time intervals. The MAPE formula is:

MAPE $=\frac{1}{n}\sum_{t=1}^{n}\frac{|y_t-\hat{y}_t|}{y_t}$ x 100;

where y_t *and* $\hat{y}_t$ and y are respectively the actual value and t t predicted value, n is the size of the testing set. Because of its simple interpretation in terms of relative error, MAPE is frequently employed as a loss function and in model evaluation in regression issues.

Results and Discussion:

Table 1 shows the result of Model diagnostic test of ANN models fitted to arrivals of onion in Balangir market. The result shows all the models satisfy the test of independence and normality of residuals which is evident from the non-significant values of Box-Pierce test statistic and Shapiro-Wilk's test Statistic values. Thus these models qualify for being selected on basis of model diagnostic criteria. This also shows the model fit statistics of the fitted ANN models for arrivals of onion confirms the selection of NNAR (1,4) model on account of lowest RMSE and MAPE.

Table 1: Model diagnostic and Model fit statistics test of ANN models fitted to arrival of onion (Quintal) in Balangir market of Balangir district of Odisha

Model	Model diagnostic test				Model fit statistics			
	Box-Pierce test		Shapiro-Wilk's test		RSME		MAPE	
	χ^2 value	p- value	w value	p- value	Training data	Testing data	Training data	Testing data
NNAR (1,1)	0.777	0.578	0.971	0.654	61.522	107.865	10.118	15.011
NNAR (1,2)	0.832	0.562	0.970	0.697	61.295	107.990	10.007	15.097
NNAR (1,3)	0.601	0.538	0.973	0.594	60.488	103.172	9.930	13.897
NNAR (1,4)	**0.815**	**0.366**	**0.974**	**0.536**	**60.357**	**99.116**	**9.881**	**13.615**

Table 2 shows the result of Model diagnostic test of ANN models fitted to arrivals of onion in Tusura market of Balangir district. The result shows that all models satisfy the test of independence and normality of residuals which is evident from the non-significant values of Box-Pierce test statistic and Shapiro-Wilk's test Statistic values. Hence selected on basis of model diagnostic criteria. This also shows the model fit statistics of the fitted ANN models for arrivals of onion confirms the selection of NNAR (6,4) model on account of lowest RMSE and MAPE.

Table 2: Model diagnostic and Model fit statistics test of ANN models fitted to arrival of onion (Quintal) in Tusura market of Balangir district of Odisha

Model	Model diagnostic test				Model fit statistics			
	Box-Pierce test		Shapiro-Wilk's test		RSME		MAPE	
	χ^2 value	p- value	w value	p- value	Training data	Testing data	Training data	Testing data
NNAR (6,1)	1.256	0.2625	0.8292	0.4321	88.139	145.995	24.884	36.251
NNAR (6,2)	0.124	0.7248	0.8298	0.7854	78.021	148.067	21.718	43.992
NNAR (6,3)	0.009	0.9212	0.8292	0.9224	72.466	147.269	19.788	44.888
NNAR (6,4)	**0.116**	**0.7325**	**0.8368**	**0.5731**	**66.473**	**150.149**	**18.608**	**45.392**

Table 3 shows the result of Model diagnostic test of ANN models fitted to arrivals of onion in kantabanji market of Balangir district. The result shows that NNAR (7,2), NNAR (7,3) and NNAR (7,4) models satisfy the test of independence and normality of residuals which is evident from the non-significant values of Box-Pierce test statistic and Shapiro-Wilk's test Statistic values. Hence selected on basis of model diagnostic criteria. This also shows the model fit statistics of the fitted ANN models for arrivals of onion confirms the selection of NNAR (7,4) model on account of lowest RMSE and MAPE.

Table 3: Model diagnostic and Model fit statistics test of ANN models fitted to arrival of onion (Quintal) in Kantabanji market of Balangir district of Odisha

Model	Model diagnostic test				Model fit statistics			
	Box-Pierce test		Shapiro-Wilk's test		RSME		MAPE	
	χ^2 value	p- value	w value	p-value	Training data	Testing data	Training data	Testing data
NNAR (7,1)	0.017	0.894	0.893	0.0124	76.411	693.093	48.239	269.592
NNAR (7,2)	1.592	0.207	0.881	0.531	47.819	663.173	43.266	334.505
NNAR (7,3)	0.207	0.648	0.790	0.612	34.536	643.773	34.942	351.823
NNAR (7,4)	**0.187**	**0.665**	**0.884**	**0.631**	**25.182**	**643.540**	**30.168**	**313.8131**

Table 4 shows the result of Model diagnostic test of ANN models fitted to price of onion in the Balangir market. The result shows all the fitted ANN models satisfy the test of independency and normality of residuals as the values of Box-Pierce test statistic and Shapiro-Wilk's test Statistic are non-significant for all fitted models. Out of these five models, NNAR(1,2) has the lowest RMSE and MAPE values as could be seen in and thus regarded as the selected best fit model for forecasting the price of onion in Balangir market.

Table 4: Model diagnostic and Model fit statistics test of ANN models fitted to Price of onion (Rs/Quintal) in Balangir market of Balangir district of Odisha

Model	Model diagnostic test				Model fit statistics			
	Box-Pierce test		Shapiro-Wilk's test		RSME		MAPE	
	χ^2 value	p- value	w value	p- value	Training data	Testing data	Training data	Testing data
NNAR (1,1)	0.408	0.523	0.638	0.621	280.927	285.750	5.201	12.549
NNAR (1,2)	**1.127**	**0.288**	**0.643**	**0.427**	**270.339**	**255.027**	**5.001**	**8.823**
NNAR (1,3)	1.432	0.231	0.639	0.052	266.629	420.771	5.029	21.206
NNAR (1,4)	1.390	0.238	0.646	0.417	266.480	464.731	5.105	23.862

Table 5 shows the result of Model diagnostic test of ANN models fitted to price of onion in the Tusura market. The result shows all the fitted ANN models satisfy the test of independency and normality of residuals as the values of Box-Pierce test statistic and Shapiro-Wilk's test Statistic are non-significant for all fitted models. Out of these five models, NNAR (1,2) has the lowest RMSE and MAPE values as could be seen in and thus regarded as the selected best fit model for forecasting the price of onion in Tusura market.

Table 5: Model diagnostic and Model fit statistics test of ANN models fitted to Price of onion (Rs/Quintal) in Tususra market of Balangir district of Odisha

Model	Model diagnostic test				Model fit statistics			
	Box-Pierce test		Shapiro-Wilk's test		RSME		MAPE	
	χ^2 value	p- value	w value	p- value	Training data	Testing data	Training data	Testing data
NNAR (1,1)	0.935	0.334	0.562	0.425	287.988	270.551	4.6611	13.221
NNAR (1,2)	**0.839**	**0.361**	**0.562**	**0.241**	**287.525**	**225.460**	**4.6283**	**10.102**
NNAR (1,3)	0.640	0.424	0.575	0.457	289.305	266.858	4.7415	12.998
NNAR (1,4)	0.443	0.506	0.586	0.561	287.853	414.640	4.9342	21.246

Table 6 shows the result of Model diagnostic test of ANN models fitted to price of onion in Kantabanji market of Balangir district. The result shows that all models satisfy the test of independence and normality of residuals which is evident from the non-significant values of Box-Pierce test statistic and Shapiro-Wilk's test Statistic values. Hence selected on basis of model diagnostic criteria. This also shows the model fit statistics of the fitted ANN models for

arrivals of onion confirms the selection of NNAR(9,5) model on account of lowest RMSE and MAPE.

Table 6: Model diagnostic and Model fit statistics test of ANN models fitted to price of onion (Rs/Quintal) in Kantabanji market of Balangir district of Odisha

Model	Model diagnostic test				Model fit statistics			
	Box-Pierce test		Shapiro-Wilk's test		RSME		MAPE	
	χ^2 value	p-value	w value	p- value	Training data	Testing data	Training data	Testing data
NNAR (9,1)	0.0968	0.756	0.649	5.162	66.708	564.482	1.357	27.331
NNAR (9,2)	0.471	0.492	0.719	1.608	53.366	562.346	1.182	27.095
NNAR (9,3)	0.692	0.406	0.753	9.924	49.828	560.918	1.114	26.978
NNAR (9,4)	0.537	0.464	0.737	4.161	46.995	559.555	1.038	26.861
NNAR (9,5)	**0.443**	**0.505**	**0.708**	**6.155**	**45.426**	**558.507**	**0.937**	**26.773**

Table 7 shows the Seven-day interval forecast of arrivals and prices of onion crop in Balangir market. The forecast values of price show stable phase while arrivals show declining phase.

Table 7: Seven-days interval forecast of wholesale onion price and arrival of Balangir market from 01 April, 2024 to 30 September,2024

Date	Price (in Rs./q)	Arrival (in Quintals)	Date	Price (in Rs./q)	Arrival (in Quintals)
01/04/2024	1992.665	559.9498	08/07/2024	1993.587	495.1726
08/04/2024	1992.817	539.1712	16/07/2024	1993.604	493.8045
15/04/2024	1992.947	519.9186	24/07/2024	1993.618	492.1930
22/04/2024	1993.058	512.4603	31/07/2024	1993.629	490.2035
29/04/2024	1993.152	508.9521	07/08/2024	1993.640	487.6315
06/05/2024	1993.233	506.5700	15/08/2024	1993.648	484.1965
13/05/2024	1993.301	504.7417	22/08/2024	1993.656	479.6771
20/05/2024	1993.360	503.2366	27/08/2024	1993.662	474.4616
27/05/2024	1993.410	501.9331	03/09/2024	1993.667	469.9162
03/06/2024	1993.452	500.7565	10/09/2024	1993.672	466.9468
10/06/2024	1993.488	499.6540	17/09/2024	1993.676	465.3097
17/06/2024	1993.519	498.5837	24/09/2024	1993.679	464.4754
24/06/2024	1993.546	497.5077	30/09/2024	1993.682	464.0649
01/07/2024	1993.568	496.3863			

Table 8 shows the Five-day interval forecast of arrivals and prices of onion crop in Tusura market. The forecast values of price show an incline phase while arrivals show decline with ups and downs in some phases.

Table 8: Five-days interval forecast of wholesale onion price and arrival of Tusura market from 01 April, 2024 to 21 September,2024

Date	Price (in Rs./q)	Arrival (in Quintals)	Date	Price (in Rs./q)	Arrival (in Quintals)
01/04/2024	2025.825	331.1033	20/07/2024	2030.461	318.9316
06/04/2024	2026.416	335.6400	25/07/2024	2030.559	277.6179
11/04/2024	2026.943	332.1918	30/07/2024	2030.647	317.8364
16/04/2024	2027.414	318.6783	04/08/2024	2030.725	300.3851
21/04/2024	2027.835	336.1389	09/08/2024	2030.796	325.9093
26/04/2024	2028.212	312.7060	14/08/2024	2030.859	313.9279
01/05/2024	2028.548	337.8545	19/08/2024	2030.915	321.8184
06/05/2024	2028.849	319.9217	24/08/2024	2030.965	311.6331
11/05/2024	2029.118	349.4754	29/08/2024	2031.010	336.6053
16/06/2024	2029.358	306.5692	03/09/2024	2031.051	330.1502
21/06/2024	2029.573	348.7176	08/09/2024	2031.087	347.5546
26/06/2024	2029.765	286.6257	13/09/2024	2031.119	331.9086
31/06/2024	2029.937	340.3979	18/09/2024	2031.148	346.3598
05/07/2024	2030.090	284.2720	23/09/2024	2031.174	298.0055
10/07/2024	2030.228	325.0214	28/09/2024	2031.197	314.3945
15/07/2024	2030.351	279.5631			

Table 9 shows the Five-day interval forecast of arrivals and prices of onion crop in Kantabanji market. The forecast values of price show an incline followed by a decilne phase while arrivals show decline with ups and downs in some phases.

Fig. 1 shows the actual, fitted and forecast values of arrivals of onion in Balangir market. The fitted values are seen to be very close to actual values which shows that the selected best fit ANN model is appropriate. The forecast values are found to show decreasing and then stable.

Table 9: Five-days interval forecast of wholesale onion price and arrival of Kantabanji market from 01 April, 2024 to 21 September,2024

Date	Price (in Rs./q)	Arrival (in Quintals)	Date	Price (in Rs./q)	Arrival (in Quintals)
01/04/2024	1977.764	385.1883	20/07/2024	1980.044	123.4809
06/04/2024	1978.330	233.3491	25/07/2024	1980.014	106.5418
11/04/2024	1978.541	131.8258	30/07/2024	1979.986	140.8532
16/04/2024	1978.916	113.4464	04/08/2024	1979.965	224.3783
21/04/2024	1979.215	111.8541	09/08/2024	1979.948	491.2464
26/04/2024	1979.586	108.7040	14/08/2024	1979.939	583.1581
01/05/2024	1979.799	137.8789	19/08/2024	1979.933	543.4909
06/05/2024	1979.959	247.6391	24/08/2024	1979.931	473.8550
11/05/2024	1980.071	496.6059	29/08/2024	1979.931	417.1825
16/06/2024	1980.170	598.3690	03/09/2024	1979.934	331.1893
21/06/2024	1980.197	537.8140	08/09/2024	1979.937	183.9121
26/06/2024	1980.204	455.1583	13/09/2024	1979.941	124.3109
31/06/2024	1980.180	382.7477	18/09/2024	1979.945	131.9108
05/07/2024	1980.162	280.5179	23/09/2024	1979.949	106.5299
10/07/2024	1980.121	133.5981	28/09/2024	1979.937	106.3211
15/07/2024	1980.083	114.3498			

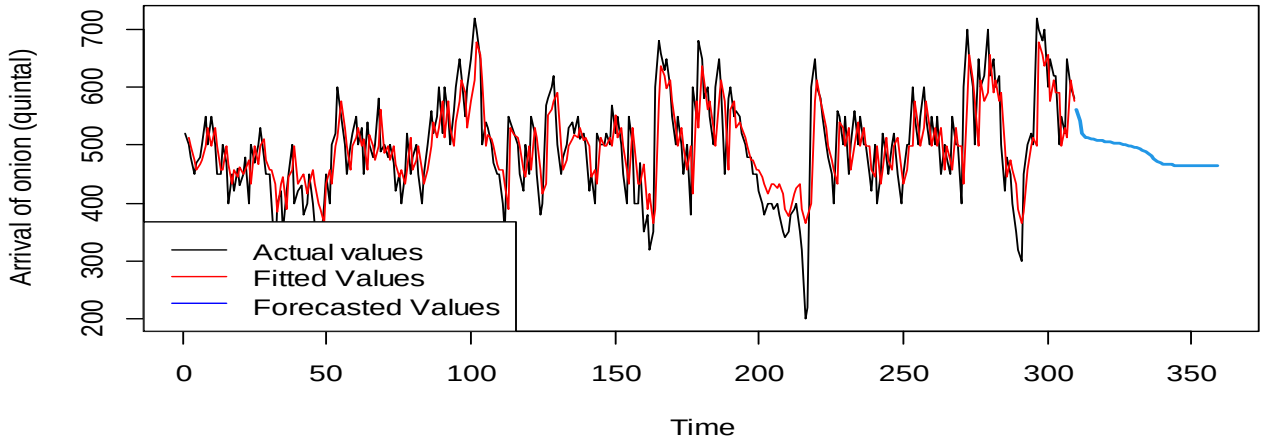

Fig. 1: Actual, fitted and forecast values of arrivals of onion (in quintal) in Balangir market of Balangir district of Odisha

Fig. 2 shows the actual, fitted and forecast values of arrivals of onion inTusura market of Balangir district. The fitted values are seen to be very close to actual values which shows that the selected best fit ANN model is appropriate. The forecast values are found to show increasing trend with fluctuations at different intervals.

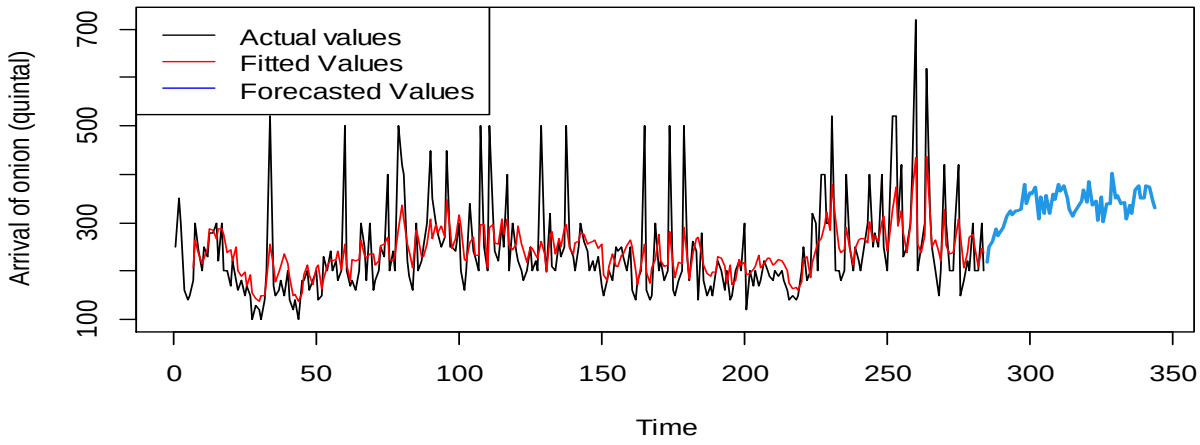

Fig. 2: Actual, fitted and forecast values of arrivals of onion (in Quintal) in Tusura market of Balangir district of Odisha

Fig. 3 shows the actual, fitted and forecast values of arrivals of onion in Kantabanji market of Balangir district. The fitted values are seen to be very close to actual values which shows that the selected best fit ANN model is appropriate. The forecast values are found to show increasing then decreasing trend with fluctuations at different intervals.

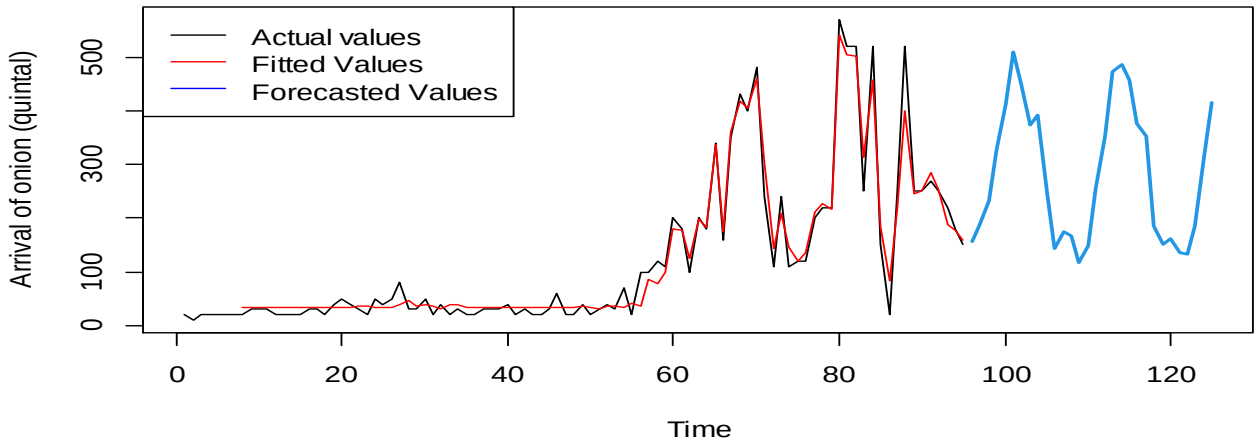

Fig. 3: Actual, fitted and forecast values of arrivals of onion (in quintal) in Kantabanji market of Balangir district of Odisha

Conclusion:

The present study employed the non-linear ANN models to forecast the arrival and price of onion crop in the markets of selected districts of Odisha. Various ANN models at a particular lag with different no. of nodes in hidden layer are fitted. In case of arrival data of onion, all models in Balangir and Tusura market; NNAR (7,2), NNAR (7, 3) and NNAR (7,4) models in Kantabanji market of Balangir district satisfy the test of independence and normality of residuals which is evident from the non-significant values of Box-Pierce test statistic and Shapiro-Wilk's test Statistic values. Thus these models qualify for being selected on basis of model diagnostic criteria. Out of these models, NNAR (1,4) in Balangir market, NNAR (6,4) in Tusura and NNAR

(7,4) in Kantabanji market having lowest RMSE and MAPE values, regarded as the selected best fit model for forecasting the arrivals of onion in the selective markets of Anugul district. Similarly, in case of price of onion in, all the fitted ANN models of all the markets satisfy the test of independency and normality of residuals. Out of these models, NNAR(1,2) in Balangir, NNAR (1,2) in Tusura and NNAR(9,5) in Kantabanji market of Anugul having lowest RMSE and MAPE values, regarded as the selected best fit model for forecasting the price of onion. The forecasted prices were compared with real time prices.

The selection of the best forecasting model and accurate forecasting of market arrivals and prices of onion would help the farmers, consumers, wholesalers as well as government to take appropriate decisions. Short-term forecasting future prices is a key issue for the farmers and this would enable the farmers to plan the production in such a way that a good price for the produce could be expected in the near future and facilitate informed decisions before sowing and help in their selection of crop. Depending on the forecasted prices, farmers can sell the produce immediately or go for storage after harvest to fetch a remunerative price.

References:

1. Choudhary, K., Jha, G.K., Das, P and Chaturvedi, K. K. (2019). Forecasting Potato Price using Ensemble Artificial Neural Networks, Indian Journal of Extension Education, 55(1): 73-77.
2. Hyndman R. J, and Khandakar Y. 2008. Automatic time series forecasting: the forecast package for R. *Journal of statistical software*, **27**: 1-22.
3. Mahdiloo M, Toloo M, Duong T. T, Saen R. F, and Tatham P. 2018. Integrated data envelopment analysis: Linear vs. nonlinear model. *European journal of operational research*, **268**(1): 255-267.
4. Naidu, G. M. and S. M. Kala (2016). A statistical study of trends in arrivals and prices of maize in selected markets of Andhra Pradesh. Int. J. Agricult. Stat. Sci., 12(1), 89- 94.
5. Najafi P, and Tabatabaei S. H. 2007. Effect of using subsurface drip irrigation and ET-HS model to increase WUE in irrigation of some crops. Irrigation and Drainage: The journal of *The International Commission on Irrigation and Drainage*, **56**(4): 477-486.
6. Trapletti A, and Hornik K. 2022. Time Series Analysis and Computational Finance, R package version 0.10-51., https://CRAN.R-project.org/package=tseries
7. Wu, J., Chen, Y., Zhou, T. and Li, T.(2019). An adaptive hybrid learning paradigm integrating CEEMD, ARIMA and SBL for crude oil price forecasting, *energies*, 12(7):1-23.

INNOVATIVE APPROACHES TO MULTILINGUAL EDUCATION: CUSTOMIZED TEACHING MATERIALS

P. Prasantham
Department of English,
Aditya Institute of Technology and Management
Corresponding author E-mail: prasantham3455@gmail.com

Abstract:

"Innovative Approaches to Multilingual Education: Customized Teaching Materials" explores the dynamic landscape of language diversity in educational settings and offers strategies for creating tailored teaching resources. In an era of globalization and multiculturalism, classrooms increasingly reflect linguistic diversity, presenting both challenges and opportunities for educators. This paper examines how customized teaching materials can effectively address the unique needs of multilingual learners, fostering inclusive and engaging learning environments. Drawing upon research in linguistics, education, and pedagogy, the abstract delves into various innovative approaches to designing teaching materials that accommodate diverse linguistic backgrounds. It discusses the importance of cultural sensitivity and linguistic inclusivity in the development of these resources, emphasizing the role of educators as facilitators of language acquisition and cultural understanding. Furthermore, the abstract highlights the benefits of personalized learning materials in promoting language proficiency, academic success, and cross-cultural communication skills among students. By showcasing examples of successful implementation and providing practical recommendations, this paper aims to inspire educators to embrace innovative approaches to multilingual education and empower them to create customized teaching materials that meet the diverse needs of their students."

Keywords: Multilingual Education, Customized Teaching Materials, Linguistic Diversity, Inclusive Learning Environments, Innovative Approaches

In a multilingual classroom, various teaching materials can be developed to cater to the diverse linguistic backgrounds of the students.

Multilingual texts

In a multilingual classroom, the creation of multilingual texts serves as a pivotal strategy to foster inclusive learning environments and support students in their language acquisition journey. These texts encompass a wide range of written materials, including worksheets, handouts, and textbooks, meticulously crafted to accommodate the linguistic diversity present within the classroom.

One of the primary advantages of multilingual texts is their ability to provide linguistic scaffolding for students, particularly those who are learning a new language while simultaneously grappling with academic content. By offering materials in multiple languages, educators effectively bridge the gap between students' proficiency levels and the instructional content, ensuring equitable access to learning resources for all learners.

Moreover, multilingual texts play a crucial role in affirming students' cultural and linguistic identities. By recognizing and valuing students' native languages, educators convey a message of respect and inclusivity, thereby promoting a positive learning environment where students feel affirmed and empowered in their linguistic heritage.

Furthermore, multilingual texts facilitate meaningful connections between students, fostering collaboration and peer learning opportunities. Students can leverage their linguistic strengths to support each other, engage in collaborative activities, and construct knowledge collectively, thus enriching the learning experience for all.

In addition to supporting language acquisition and promoting cultural inclusivity, multilingual texts also contribute to the development of critical thinking and literacy skills. By engaging with content in multiple languages, students gain exposure to diverse perspectives, linguistic structures, and modes of expression, thereby enhancing their ability to analyze, evaluate, and synthesize information across languages and cultures.

The creation of multilingual texts represents a proactive approach to meeting the diverse needs of students in multilingual classrooms. By embracing linguistic diversity and leveraging it as a valuable instructional resource, educators can cultivate environments where all students feel supported, empowered, and equipped to succeed academically and beyond.

Visual aids

Visual aids are indispensable tools in the multilingual classroom, offering a versatile means of conveying concepts and vocabulary across languages while accommodating diverse learning styles and linguistic backgrounds. These aids encompass a myriad of resources such as posters, charts, diagrams, and flashcards, thoughtfully designed to supplement verbal instruction and enhance comprehension for all students.

One of the primary strengths of visual aids lies in their ability to transcend language barriers and facilitate comprehension through visual representations. By incorporating images, symbols, and icons alongside minimal text, educators can convey complex ideas and vocabulary in a universally understandable format, ensuring equitable access to content for students regardless of their language proficiency.

Moreover, visual aids cater to the diverse learning preferences present within the classroom, appealing to visual and kinesthetic learners who may benefit from hands-on engagement with tactile materials. Whether through colorful posters illustrating vocabulary

themes or interactive flashcards for vocabulary reinforcement, visual aids engage students' senses and promote active learning experiences that are both engaging and effective.

Furthermore, visual aids serve as valuable tools for scaffolding language acquisition, providing contextual support and reinforcing vocabulary retention through repeated exposure. By pairing images with corresponding words or phrases in multiple languages, educators help students make meaningful connections between linguistic elements and real-world contexts, facilitating deeper comprehension and long-term retention of language concepts.

In addition to supporting language learning objectives, visual aids foster a sense of cultural inclusivity by incorporating diverse representations and perspectives into instructional materials. By featuring culturally relevant imagery and themes, educators validate students' cultural identities and create inclusive learning environments where all students feel valued and represented.

The development of visual aids underscores the importance of employing a multi-modal approach to instruction in the multilingual classroom. By harnessing the power of visual imagery and minimal text, educators can create inclusive learning experiences that promote linguistic proficiency, cultural competence, and academic success for all students, regardless of their linguistic backgrounds or learning needs.

Interactive multimedia

In the dynamic landscape of multilingual education, the integration of interactive multimedia resources emerges as a cornerstone for engaging students and fostering comprehensive comprehension across diverse linguistic backgrounds. These multimedia resources encompass a wide array of digital tools and platforms, including videos, presentations, simulations, and online activities, thoughtfully curated to accommodate varying learning styles and linguistic proficiencies.

One of the primary advantages of interactive multimedia lies in its ability to transcend traditional language barriers and cater to the diverse needs of multilingual learners. By incorporating audio, video, and text in multiple languages, educators can provide students with immersive learning experiences that cater to their individual language preferences and proficiency levels. Whether through narrated videos, multilingual presentations, or interactive online activities, multimedia resources offer students opportunities to engage with content in ways that resonate with their unique learning styles and linguistic backgrounds.

Moreover, interactive multimedia resources serve as powerful tools for enhancing comprehension and retention of academic content. By leveraging a combination of visual, auditory, and textual cues, educators can reinforce key concepts and vocabulary in multiple languages, thereby facilitating deeper understanding and long-term retention among students. Whether through interactive quizzes, virtual simulations, or multimedia presentations with

embedded translations, these resources provide students with dynamic opportunities to interact with content and apply their language skills in authentic contexts.

Furthermore, interactive multimedia resources foster active engagement and collaboration among students, promoting peer learning and knowledge sharing across linguistic boundaries. Through collaborative activities such as online discussions, group projects, and virtual simulations, students have the opportunity to collaborate with peers from diverse linguistic backgrounds, exchange ideas, and co-construct knowledge in a supportive and inclusive learning environment.

In addition to supporting language learning objectives, interactive multimedia resources also promote cultural awareness and appreciation by incorporating diverse representations and perspectives into instructional materials. By featuring culturally relevant content and multilingual dialogue, educators can validate students' cultural identities and foster a sense of belonging and inclusivity within the classroom.

Language learning apps and software

Language learning apps and software have revolutionized the way language education is approached, particularly in multilingual classrooms, by providing versatile and adaptive tools that cater to diverse learning needs and linguistic backgrounds. These digital resources encompass a wide range of platforms, including mobile applications, web-based programs, and computer software, offering customizable content tailored to students' proficiency levels and language combinations.

One of the key advantages of language learning apps and software is their flexibility in accommodating the varied needs and preferences of multilingual learners. With customizable features such as language selection, proficiency assessments, and personalized learning paths, these digital tools empower students to tailor their language learning experience to match their individual goals, preferences, and learning styles. Whether students are beginners seeking foundational language skills or advanced learners aiming to refine their proficiency, language learning apps and software provide adaptive resources that meet students at their respective proficiency levels.

Moreover, language learning apps and software offer comprehensive opportunities for students to practice and reinforce all four language skills – reading, writing, listening, and speaking – in a multilingual context. Through interactive exercises, multimedia resources, and real-life simulations, students engage in authentic language use and communication experiences that mirror real-world contexts, thereby enhancing their language proficiency and communicative competence across multiple languages.

Furthermore, language learning apps and software facilitate independent learning and self-directed study, empowering students to take ownership of their language learning journey

and progress at their own pace. With features such as progress tracking, performance analytics, and interactive feedback, students receive personalized guidance and support that enable them to monitor their learning achievements, identify areas for improvement, and set achievable goals for language development.

In addition to supporting language acquisition and proficiency development, language learning apps and software foster cultural awareness and global competence by exposing students to diverse linguistic and cultural perspectives. Through authentic materials, cultural insights, and interactive experiences, students gain a deeper understanding of the cultural contexts in which languages are used, thereby promoting intercultural competence and appreciation for linguistic diversity.

Language learning apps and software represent invaluable resources for educators and students alike in multilingual classrooms, offering versatile and adaptive tools that enhance language learning outcomes, promote cultural competence, and prepare students for success in an interconnected and multilingual world.

Cultural materials

In the mosaic of a multilingual classroom, cultural materials serve as vibrant threads that weave together diverse linguistic backgrounds, fostering cultural awareness, empathy, and appreciation among students. These materials encompass an array of cultural artifacts, including literature, music, art, folklore, cuisine, and traditions, carefully curated to reflect the rich tapestry of human experience and expression across different cultures and languages.

One of the primary benefits of integrating cultural materials into the curriculum is their ability to serve as windows into the lived experiences, values, and traditions of diverse communities around the world. Through literature from various cultural traditions, students gain insights into different perspectives, historical contexts, and societal issues, fostering empathy and understanding across linguistic and cultural boundaries. Similarly, exposure to diverse musical genres, artistic styles, and culinary traditions broadens students' horizons, enabling them to appreciate the beauty and complexity of human creativity in its myriad forms.

Moreover, cultural materials provide valuable opportunities for students to develop intercultural competence and global citizenship skills by engaging with authentic cultural artifacts and expressions. Whether through the study of indigenous literature, exploration of world music traditions, or examination of historical artifacts, students gain a deeper understanding of the interconnectedness of cultures and the importance of cultural diversity in shaping our shared humanity. By promoting open-mindedness, respect, and curiosity about different cultures and languages, cultural materials empower students to navigate an increasingly interconnected and diverse world with empathy and cultural sensitivity.

Furthermore, integrating cultural materials into the curriculum fosters linguistic and academic proficiency by providing authentic contexts for language use and communication. Through reading literature in its original language, analyzing songs lyrics, or interpreting visual art, students develop language skills in context, expanding their vocabulary, grammar, and cultural literacy in meaningful ways. Moreover, by engaging with culturally relevant materials, students are more motivated and invested in their language learning journey, as they see the immediate relevance and applicability of language skills to real-life situations and cultural contexts.

In addition to promoting cultural awareness and linguistic proficiency, cultural materials also contribute to the development of critical thinking, creativity, and empathy among students. By encouraging students to critically analyze cultural artifacts, challenge stereotypes, and empathize with diverse perspectives, educators foster a culture of inclusivity and respect within the classroom, where all students feel valued, seen, and empowered to contribute their unique voices and experiences to the collective learning community.

The integration of cultural materials into the curriculum represents a transformative pedagogical approach to multilingual education, one that celebrates diversity, promotes empathy, and empowers students to become active global citizens in an increasingly interconnected and multicultural world. By embracing cultural diversity as a cornerstone of language learning and education, educators lay the foundation for a more inclusive, equitable, and harmonious society, where linguistic and cultural differences are celebrated as a source of strength and enrichment for all.

Language games and activities

Language games and activities represent dynamic and interactive tools for promoting language acquisition and communication skills in multilingual classrooms. These engaging resources encompass a wide range of activities, including games, puzzles, role-plays, storytelling, and collaborative projects, designed to motivate and inspire students to practice language in a fun and meaningful way.

One of the primary advantages of language games and activities is their ability to create a lively and immersive learning environment that stimulates students' interest and enthusiasm for language learning. By incorporating elements of play, competition, and teamwork, these activities capture students' attention and foster active engagement, making language learning both enjoyable and rewarding.

Moreover, language games and activities provide valuable opportunities for students to practice and reinforce language skills in authentic contexts. Whether through vocabulary games, grammar drills, or communication exercises, students engage in meaningful language practice that promotes fluency, accuracy, and confidence in speaking, listening, reading, and writing

skills. By providing immediate feedback and opportunities for reflection, these activities enable students to monitor their progress, identify areas for improvement, and develop strategies for effective language use and communication.

Furthermore, language games and activities encourage collaborative learning and peer interaction, fostering a sense of community and camaraderie within the classroom. Through group games, pair activities, and role-plays, students collaborate with their peers, exchange ideas, and negotiate meaning in a supportive and interactive environment. By working together towards common goals, students develop interpersonal skills, cultural competence, and teamwork abilities that are essential for success in an interconnected and multicultural world.

In addition to promoting language proficiency and communication skills, language games and activities also support cognitive development and critical thinking skills. By challenging students to solve puzzles, think creatively, and make decisions in real-time, these activities stimulate cognitive processes such as problem-solving, decision-making, and pattern recognition, enhancing students' cognitive flexibility, memory, and attention span.

Language games and activities represent versatile and effective tools for promoting language learning and communication in multilingual classrooms. By infusing learning with elements of play, collaboration, and creativity, educators create dynamic and engaging learning experiences that inspire students to become active and confident language learners, equipped with the skills and strategies they need to succeed in a globalized and interconnected world.

Adapted texts and simplified language

Adapting texts and simplifying language is a pivotal strategy in multilingual education, offering tailored learning materials that cater to the diverse linguistic needs and proficiency levels of students. This approach involves modifying existing texts to make them more accessible and comprehensible to multilingual learners, providing graded reading materials and language scaffolding as needed to support language acquisition and literacy development.

One of the key advantages of adapted texts and simplified language is their ability to bridge the gap between students' current language proficiency levels and the complexity of academic content. By modifying vocabulary, sentence structure, and content complexity, educators create learning materials that align with students' linguistic abilities, enabling them to engage with content more effectively and build confidence in their language skills.

Moreover, adapted texts and simplified language provide valuable scaffolding support for multilingual learners, helping them navigate the challenges of reading comprehension and language acquisition. By breaking down complex ideas into manageable chunks, providing contextual clues, and offering glossaries or annotations, educators guide students through the learning process, facilitating deeper understanding and retention of academic content.

Furthermore, adapted texts and simplified language promote equitable access to learning materials for all students, regardless of their language background or proficiency level. By providing graded reading materials that gradually increase in difficulty, educators ensure that all students have access to age-appropriate content that matches their reading abilities and language development stage, thereby promoting inclusive learning environments where every student can succeed.

In addition to supporting language acquisition and literacy development, adapted texts and simplified language also foster a sense of cultural inclusivity and relevance within the classroom. By selecting texts that reflect students' linguistic and cultural backgrounds, educators validate students' identities and lived experiences, creating a learning environment that is affirming, engaging, and culturally responsive.

Adapted texts and simplified language represent powerful tools for promoting language learning and academic success in multilingual classrooms. By providing tailored learning materials that meet students at their individual proficiency levels, educators empower multilingual learners to access, comprehend, and engage with academic content effectively, laying the foundation for lifelong learning and achievement.

Language learning workbooks

Language learning workbooks are indispensable resources in multilingual classrooms, offering structured exercises, drills, and practice activities that cater to the diverse linguistic needs and proficiency levels of students. These workbooks provide targeted practice opportunities for language acquisition and skill development, enabling students to reinforce their language skills in a systematic and comprehensive manner.

One of the primary advantages of language learning workbooks is their ability to provide structured guidance and support for students as they navigate the complexities of language learning. By organizing exercises and activities according to language proficiency levels and learning objectives, educators create a scaffolded learning experience that allows students to progress at their own pace and build confidence in their language abilities.

Moreover, language learning workbooks offer a wide range of practice activities that target different language skills, including reading, writing, listening, and speaking. From grammar drills and vocabulary exercises to role-plays and communicative tasks, these workbooks provide diverse opportunities for students to engage with language in meaningful and relevant contexts, thereby promoting holistic language development.

Furthermore, language learning workbooks can be tailored to the specific linguistic needs and cultural backgrounds of students, incorporating authentic materials and relevant themes that resonate with their lived experiences. By selecting culturally relevant topics, incorporating authentic texts, and providing contextually rich exercises, educators create workbooks that are

engaging, motivating, and culturally responsive, fostering a deeper connection between students and the language they are learning.

In addition to supporting language acquisition and skill development, language learning workbooks also promote learner autonomy and self-directed study habits. By providing clear instructions, feedback, and answer keys, these workbooks empower students to take ownership of their learning journey, monitor their progress, and identify areas for improvement, thereby fostering independent learning skills that are essential for lifelong language proficiency.

Language learning workbooks represent valuable resources for educators and students alike in multilingual classrooms, offering structured and scaffolded practice opportunities that support language acquisition, skill development, and cultural competence. By providing targeted practice activities tailored to students' linguistic needs and proficiency levels, educators empower multilingual learners to succeed academically and thrive in an interconnected and multicultural world.

Collaborative projects

Facilitating collaborative projects and group activities in multilingual classrooms fosters a rich and dynamic learning environment where students can engage in meaningful interactions, share their linguistic and cultural expertise, and learn from each other's perspectives. These collaborative endeavors encompass a diverse array of projects, including group assignments, cooperative tasks, and cross-cultural exchanges, designed to promote collaboration, communication, and cultural understanding among students.

One of the primary benefits of collaborative projects is their ability to leverage the linguistic diversity present within the classroom as a valuable educational resource. By bringing together students with different language backgrounds, educators create opportunities for peer learning, language exchange, and cross-cultural communication, fostering an inclusive and supportive learning community where students feel empowered to contribute their unique perspectives and insights.

Moreover, collaborative projects encourage students to work together towards common goals, promoting teamwork, cooperation, and interpersonal skills. Whether collaborating on a group presentation, conducting research together, or participating in a cultural exchange program, students learn to communicate effectively, negotiate differences, and resolve conflicts in a constructive and respectful manner, thereby developing essential life skills that are applicable beyond the classroom.

Furthermore, collaborative projects provide authentic contexts for language use and communication, enabling students to apply their language skills in meaningful and relevant ways. By engaging in collaborative tasks that require active participation, such as group discussions, problem-solving activities, and project-based learning, students enhance their

language proficiency, fluency, and communicative competence, while also gaining confidence in their ability to express themselves effectively in different linguistic and cultural contexts.

In addition to promoting language learning objectives, collaborative projects also foster cultural awareness and appreciation among students. By encouraging students to share their cultural traditions, customs, and values with their peers, educators create opportunities for cross-cultural learning and exchange, fostering empathy, respect, and appreciation for diversity within the classroom and beyond.

Collaborative projects represent a powerful pedagogical approach to multilingual education, one that celebrates linguistic diversity, promotes cultural competence, and empowers students to become active global citizens in an increasingly interconnected and multicultural world. By fostering collaboration, communication, and cultural understanding among students, educators create inclusive learning environments where all students can thrive academically, socially, and emotionally.

Teacher-made materials

Teacher-made materials are invaluable assets in the multilingual classroom, providing educators with the flexibility to tailor instruction to the specific needs, interests, and proficiency levels of their students. These customized resources encompass a wide range of materials, including worksheets, lesson plans, activities, and teaching aids, meticulously crafted to address the diverse learning styles, linguistic backgrounds, and cultural experiences of students.

One of the primary advantages of teacher-made materials is their ability to incorporate real-life examples, relevant topics, and authentic language use into instruction, thereby enhancing learning outcomes and promoting meaningful language acquisition. By selecting content that resonates with students' interests, experiences, and cultural backgrounds, educators create engaging and relevant learning experiences that capture students' attention, foster motivation, and promote active participation in the learning process.

Moreover, teacher-made materials provide educators with the flexibility to adapt instruction to the diverse needs and proficiency levels of students, ensuring that all learners have access to instructional resources that meet their individual learning needs. Whether designing differentiated activities, providing language scaffolding, or offering extension opportunities for advanced learners, educators can tailor instruction to support the diverse linguistic abilities and learning styles present within the classroom.

Furthermore, teacher-made materials enable educators to integrate authentic language use into instruction, exposing students to real-world language patterns, contexts, and communicative functions. By incorporating authentic texts, multimedia resources, and interactive activities that mirror real-life communication scenarios, educators help students develop practical language

skills that are applicable in everyday contexts, thereby enhancing their communicative competence and confidence in using the target language.

In addition to promoting language learning objectives, teacher-made materials also foster a sense of ownership, creativity, and empowerment among educators, as they have the autonomy to design instruction that reflects their pedagogical philosophy, teaching style, and students' needs. By leveraging their expertise, creativity, and knowledge of students' interests and abilities, educators can create learning materials that inspire curiosity, promote critical thinking, and cultivate a lifelong love of learning among students.

Teacher-made materials represent a powerful tool for promoting effective language instruction in multilingual classrooms, one that celebrates diversity, fosters engagement, and empowers educators to create meaningful learning experiences that support the academic, linguistic, and socio-emotional development of all students. By harnessing the potential of teacher-made materials, educators can cultivate inclusive learning environments where every student has the opportunity to thrive and succeed.

Conclusion:

In conclusion, the diverse array of instructional strategies and resources explored in the context of multilingual education underscore the importance of adopting a holistic and student-centered approach to language instruction. From the integration of cultural materials to the development of teacher-made resources tailored to students' needs, each approach offers unique opportunities to promote linguistic proficiency, cultural competence, and academic success in the multilingual classroom.

By leveraging the power of visual aids, multimedia resources, and interactive activities, educators can create dynamic and engaging learning environments that cater to the diverse learning styles and linguistic backgrounds of students. Moreover, by fostering collaboration, communication, and cultural exchange through collaborative projects and group activities, educators nurture inclusive learning communities where students feel empowered to share their linguistic and cultural expertise, learn from each other's perspectives, and celebrate diversity.

Furthermore, the integration of authentic language use, real-life examples, and relevant topics into instruction through teacher-made materials enhances learning outcomes and promotes meaningful language acquisition experiences for students. Ultimately, these instructional strategies and resources represent valuable tools for promoting language learning, cultural awareness, and academic achievement in multilingual classrooms, empowering students to succeed in an interconnected and multicultural world.

References:

1. Baker, C. (2011). *Foundations of bilingual education and bilingualism*. Multilingual Matters: Bristol, UK.

2. Cummins, J. (2008). *Teaching for cross-language transfer in dual language education: Possibilities and pitfalls*. Caslon Publishing: Philadelphia, PA, USA.
3. Echevarria, J., Vogt, M. E., & Short, D. (2017). *Making content comprehensible for English learners: The SIOP model*. Pearson: Boston, MA, USA.
4. Genesee, F., Lindholm-Leary, K., Saunders, W., & Christian, D. (2005). *Educating English language learners: A synthesis of research evidence*. Cambridge University Press: Cambridge, UK.
5. Krashen, S. D. (1985). *The input hypothesis: Issues and implications*. Longman: New York, NY, USA.
6. Larsen-Freeman, D., & Anderson, M. (2011). *Techniques and principles in language teaching*. Oxford University Press: Oxford, UK.
7. Lightbown, P. M., & Spada, N. (2013). *How languages are learned*. Oxford University Press: Oxford, UK.
8. Nunan, D. (1999). *Second language teaching and learning*. Heinle & Heinle Publishers: Boston, MA, USA.
9. Richards, J. C., & Rodgers, T. S. (2014). *Approaches and methods in language teaching*. Cambridge University Press: Cambridge, UK.
10. Wong Fillmore, L., & Snow, C. E. (2000). *What teachers need to know about language*. ERIC Clearinghouse on Languages and Linguistics: Washington, D.C., USA.

BITCOIN AND CRYPTOCURRENCY MARKET: OPPORTUNITIES, CHALLENGES, AND FUTURE DIRECTIONS

Jyoti Ainapur*, Maheshkumar Maharudrappa, Harshavardhan M, Arati Biradar, Kalyanrao. K, Ashwin Kumar, Nikhitha and Arpita

Department of Master of Business Administration,

Guru Nanak Dev Engineering College, Bidar -585403, Karnataka, India

*Corresponding author E-mail: jyotiainapur@gndecb.ac.in

Abstract:

The cryptocurrency market has experienced significant growth and volatility since the introduction of Bitcoin in 2009. This paper provides an overview of the Bitcoin and cryptocurrency market, including its history, features, advantages, and challenges. We also discuss the regulatory environment, types of cryptocurrencies traded, and future opportunities for cryptocurrency adoption. Our analysis highlights the potential for cryptocurrency to continue growing and evolving, despite regulatory uncertainty and market volatility.

Keywords: Bitcoin, Cryptocurrency, Blockchain, Digital currency

Introduction:

The rise of cryptocurrency has transformed the financial landscape, offering a decentralized, digital alternative to traditional fiat currencies. Bitcoin, the first and most well-known cryptocurrency, has paved the way for a diverse range of altcoins, each with unique features and use cases. As the cryptocurrency market continues to evolve, it is essential to understand its history, benefits, and challenges to navigate its future directions.

Objectives:

1. To provide a comprehensive overview of the Bitcoin and cryptocurrency market.
2. To discuss the regulatory environment and its impact on the cryptocurrency market.
3. To examine the types of cryptocurrencies traded and their features.
4. To identify future opportunities and challenges for cryptocurrency adoption.

Bitcoin:

Bitcoin is a decentralized digital currency and a type of cryptocurrency. It was introduced in 2009 by an anonymous person or group using the pseudonym "Satoshi Nakamoto." Unlike traditional fiat currencies issued and regulated by governments, Bitcoin operates on a decentralized network without the need for a central authority, such as a central bank.

Features of Bitcoin:

1. Decentralization: Peer-to-peer network with no central authority.
2. Blockchain Technology: Transparent, immutable ledger for secure transactions.

3. Limited Supply: 21 million coins, with a predetermined issuance schedule.
4. Mining: Validation and addition of transactions to the blockchain, rewarded with bitcoins and fees.
5. Wallets: Digital storage for bitcoins, with public addresses and private keys.
6. Pseudonymity: Transactions associated with alphanumeric addresses, not real-world identities.
7. Transaction Transparency: Public blockchain records all transactions, but identities remain private.
8. Volatility: High price fluctuations, making it a popular asset for trading and investment.

History of Bitcoin:

- 2008: October: Satoshi Nakamoto publishes the Bitcoin whitepaper
- 2009: January: Genesis block mined, Bitcoin network begins, First open-source Bitcoin software release
- 2010: May: First real-world Bitcoin transaction (10,000 BTC for 2 pizzas)
- 2011: Growing popularity and price surge (from $0.06 to $30)
- 2013: Price reaches $1,000, media attention, and volatility
- 2014: Mt. Gox exchange collapses due to hacking
- 2017: Price reaches $20,000, mainstream attention, and correction
- 2019-2020: Growing institutional interest and investment
- 2021: Accelerated institutional adoption and increased regulatory scrutiny

Bitcoin's history is marked by rapid growth, price volatility, and increasing mainstream recognition. Despite challenges, it has become a significant force in the global financial landscape.

How to trade in Bitcoin:

1. Educate yourself about Bitcoin and trading.
2. Choose a reliable cryptocurrency exchange.
3. Create an account and fund it with fiat currency or other cryptocurrencies.
4. Select a trading strategy (day trading, swing trading, or long-term investing).
5. Implement security measures (2FA, strong password, hardware wallet).
6. Start trading (market orders or limit orders).
7. Monitor the market and use technical analysis tools.
8. Set risk management strategies (stop-loss orders, don't invest more than you can afford to lose).
9. Stay informed about market news and developments.
10. Be aware of tax implications in your country.
11. Practice caution and start with a small investment.

Remember, trading carries significant risks, and it's essential to approach it with discipline and continuous learning.

Technical terms in Bitcoin trading:

1. Market Order: Buy/sell at current market price.
2. Limit Order: Buy/sell at specific price or better.
3. Stop-Loss Order: Sell when price reaches a certain level to limit losses.
4. Take-Profit Order: Sell when price reaches a certain level to secure profits.
5. Bid: Highest price buyer is willing to pay.
6. Ask: Lowest price seller is willing to accept.
7. Spread: Difference between bid and ask.
8. Volume: Total Bitcoin traded in a specified period.
9. Liquidity: Ease of buying/selling without affecting price.
10. Candlestick Chart: Shows price movement over time.
11. Support/Resistance: Price levels with significant buying/selling interest.
12. Moving Averages (MA): Smoothed price data to identify trends.
13. Relative Strength Index (RSI): Measures price movement speed and change.
14. Fibonacci Retracement: Identifies potential support/resistance levels.
15. Bull/Bear Market: Periods of sustained price growth/decline and optimism/pessimism.

Understanding these terms is crucial for effective Bitcoin trading and navigating the cryptocurrency market.

Beginner's guide to Bitcoin:

1. What is Bitcoin?: Digital currency on a decentralized network (blockchain).
2. Market Basics: 24/7 market, price determined by supply and demand.
3. Exchanges: Choose a reputable exchange to trade Bitcoin.
4. Wallets: Store Bitcoins securely in a software, hardware, or paper wallet.
5. Market Price: Fluctuates constantly, can be highly volatile.
6. Market Capitalization: Total value of all Bitcoins in circulation.
7. Buying Bitcoin: Use fiat currency or exchange other cryptocurrencies.
8. Satoshi: Smallest unit of Bitcoin (1/100,000,000th).
9. Security and Risks: Ensure proper security, beware of scams and phishing.
10. Market Analysis: Understand trends and technical analysis.
11. Long-term vs. Short-term: Choose your investment strategy.
12. Market Sentiment and News: Stay informed about news and regulatory developments.
13. Dollar-Cost Averaging: Invest a fixed amount regularly to mitigate volatility.
14. Taxation: Be aware of tax implications and keep records.

15. Learning and Patience: Continuously educate yourself, be patient, and avoid impulsive decisions.

Bitcoin trading strategies:

Trading Bitcoin requires careful planning and disciplined execution of strategies due to its high volatility. Here are some common strategies that traders use to trade Bitcoin:

Trend following: This strategy involves identifying the direction of the prevailing trend (bullish or bearish) and trading in the direction of that trend. Traders may use technical indicators like moving averages or trendlines to identify trends and enter positions accordingly.

Breakout trading: Breakout traders look for significant price movements that break through key support or resistance levels. When a breakout occurs, traders may enter positions in the direction of the breakout, anticipating further price movement.

Swing trading: Swing traders aim to profit from short to medium-term price swings within a broader trend. They enter positions when they expect a short-term price reversal or correction to occur.

Scalping: Scalpers aim to make small profits from frequent trades, capitalizing on small price movements. This strategy requires quick execution and tight stop-losses to minimize potential losses.

Range trading: Range traders identify price ranges or channels in which Bitcoin's price is confined. They buy near support levels and sell near resistance levels, capitalizing on price fluctuations within the range.

Arbitrage: Arbitrage traders exploit price differences of Bitcoin on different exchanges. They buy from one exchange at a lower price and sell on another at a higher price, making a profit from the price differential.

Dollar-Cost Averaging (DCA): DCA is a long-term investment strategy where traders invest a fixed amount of money at regular intervals, regardless of Bitcoin's price. This strategy is designed to reduce the impact of short-term price fluctuations.

Hedging: Traders use hedging strategies to protect their positions from adverse price movements. They may use derivatives or options to offset potential losses in their Bitcoin holdings.

Sentiment Analysis: Traders analyze market sentiment, news, and social media to gauge market sentiment and make trading decisions based on positive or negative sentiment.

Stop-Loss and Take-Profit orders: Using stop-loss and take-profit orders is essential for risk management. Stop-loss orders help limit potential losses, while take-profit orders allow traders to secure profits at predetermined levels.

Technical analysis: Traders use technical analysis to study historical price data and identify patterns, trends, and potential entry and exit points for their trades.

Fundamental analysis: Fundamental analysis involves evaluating Bitcoin's underlying factors, such as technology developments, adoption rate, and macroeconomic factors, to determine its intrinsic value and potential future price movements.

It's important to note that no trading strategy is foolproof, and the cryptocurrency market can be highly unpredictable. Traders should always exercise caution, use risk management techniques, and never invest more than they can afford to lose. Additionally, each trader's risk tolerance and investment goals will determine which strategy is most suitable for them.

Advantages of Bitcoin:

- Decentralization: Not controlled by any central authority
- Global Accessibility: Can be used anywhere with internet access
- Lower Transaction Fees: Cost-effective, especially for international transactions
- Fast Transactions: Generally faster than traditional bank transfers
- Financial Inclusion: Provides financial services to the unbanked and underbanked
- Security and Privacy: Secured by cryptography, with pseudonymous transactions
- Scarcity and Limited Supply: Predictable issuance schedule, potentially protecting against inflation
- Potential Hedge against Economic Uncertainty: Viewed by some as a store of value and hedge against uncertainty
- Borderless Nature: Transcends borders, facilitating cross-border trade and remittances
- Innovation and Technological Advancement: Paved the way for blockchain technology adoption
- Ownership and Control: Direct ownership and control of funds without third-party reliance
- Transparency: Public blockchain allows for verification and auditing of transactions

Note: While Bitcoin offers these advantages, it also faces challenges like price volatility and regulatory scrutiny.

Risk in Bitcoin market

- **Price volatility:** Rapid price fluctuations can lead to gains or losses.
- **Lack of regulation**: Exposure to fraud, scams, and risks without consumer protections.
- **Market manipulation**: Susceptible to manipulation by large players or "wh atility: Rapid price fluctuations can lead to gains or losses.
- **Lack of regulation**: Exposure to fraud, scams, and risks without consumer protections.
- **Market manipulation**: Susceptible to manipulation by large players or "wh atility: Rapid price fluctuations can lead to gains or losses.
- **Cybersecurity**: Hacking, phishing, vulnerable wallets/keys

- **Liquidity**: Limited for some trading pairs
- **Exchange**: Security breaches, hacks, shutdowns
- **Regulatory**: Evolving landscape, potential restrictions
- **Operational**: Technical issues, transaction delays
- **Emotional**: Impulsive decisions due to volatility

Minimum nvestment in Bitcoin trading:

- No fixed minimum amount required
- Can buy fractions of a Bitcoin (even a Satoshi, 1/100,000,000th of a Bitcoin)
- Common scenarios:
- Exchanges: $10 or less minimum deposit
- Fractional Bitcoin: start with a very small investment
- Bitcoin ATMs: $5 or $10 minimum purchase
- P2P Platforms: negotiate with the seller
- Consider transaction fees, exchange rates, and other costs when making small investments
- Only invest what you can afford to lose, especially in the volatile cryptocurrency market
- Beginners may start with a small amount to gain experience before committing larger sums.

Bitcoin price history

Bitcoin's price history has been characterized by significant volatility and remarkable growth over the years. Here are some key milestones in Bitcoin's price growth:

- **January 2009:** Bitcoin was introduced, and its price was essentially zero as it was not yet traded on any exchanges.
- **May 2010:** The first recorded commercial transaction with Bitcoin took place when Laszlo Hanyecz purchased two pizzas for 10,000 bitcoins. This event is famously known as "Bitcoin Pizza Day."
- **February 2011:** Bitcoin's price reached $1 for the first time.
- **April 2013:** Bitcoin's price surpassed $100 for the first time, reaching new milestones rapidly.
- **November 2013:** Bitcoin's price surpassed $1,000 for the first time, but it experienced a significant price correction shortly after.
- **Late 2017:** Bitcoin witnessed an unprecedented price surge, reaching its all-time high of nearly $20,000 in December 2017.
- **2018-2019:** Following the peak in late 2017, Bitcoin's price experienced a prolonged bear market, with significant price declines throughout 2018 and 2019.

- **2020-2021:** Bitcoin's price started to recover in 2020 and saw renewed interest from institutional investors. In 2021, Bitcoin experienced another price surge, reaching new all-time highs above $60,000 in April 2021.

It's important to note that Bitcoin's price is highly volatile and subject to sudden price fluctuations. As a result, the growth of the Bitcoin market has been marked by periods of rapid appreciation and periods of significant correction.

Challenges of Bitcoin market

1. Price volatility: Bitcoin's price can fluctuate rapidly, making it difficult for mainstream adoption.
2. Regulatory uncertainty: Different countries have varying regulations, creating uncertainty for businesses and users.
3. Security concerns: Users and exchanges are vulnerable to hacking and cyber threats.
4. Scalability Issues: Bitcoin's limited block size and block time can lead to slow transaction processing and high fees.
5. Environmental impact: The energy-intensive mining process raises concerns about Bitcoin's carbon footprint.
6. Lack of consumer protections: Users are exposed to fraud, scams, and financial losses due to limited consumer protections.
7. Market manipulation: The small market size makes it susceptible to manipulation by large players.
8. Volatility and merchant adoption: Merchants may hesitate to accept Bitcoin due to price volatility.
9. Blockchain scalability: The growing number of transactions and smart contracts may hinder the Bitcoin network's capacity.
10. User education and experience: Complexity and poor user experience can be barriers to entry for new users.
11. Perception and public image: Bitcoin's association with criminal activities and scams can negatively impact its public image.

Regulations of Bitcoin market

Regulations of the Bitcoin market vary significantly from country to country and can be subject to change as governments and regulatory authorities adapt to the evolving cryptocurrency landscape. Since my knowledge is up to September 2021, I'll provide a general overview of how Bitcoin is regulated in some major regions, but it's important to note that regulations may have changed since then. Always check with local authorities or legal experts for the most up-to-date information in your jurisdiction.

- **United States:** In the United States, Bitcoin is considered a commodity, and its regulation primarily falls under the purview of the Commodity Futures Trading Commission (CFTC) and the Securities and Exchange Commission (SEC). Various states may also have their own additional regulations.
- **European Union:** In the European Union, Bitcoin and other cryptocurrencies are subject to anti-money laundering (AML) and counter-terrorism financing (CTF) regulations. The EU's Fifth Anti-Money Laundering Directive (5AMLD) brought virtual currency service providers under AML/CFT rules.
- **United Kingdom:** The UK regulates cryptocurrency exchanges and custodian wallet providers under the Money Laundering, Terrorist Financing, and Transfer of Funds (Information on the Payer) Regulations 2017 (MLR 2017).
- Japan: Japan has a relatively cryptocurrency-friendly approach, recognizing Bitcoin as legal tender since 2017. Cryptocurrency exchanges must be registered with the Financial Services Agency (FSA) and comply with certain security and operational requirements.
- **China:** China has imposed various restrictions on Bitcoin and cryptocurrency trading, including banning cryptocurrency exchanges and initial coin offerings (ICOs). However, individuals can hold Bitcoin as property.
- **South Korea:** South Korea has imposed AML regulations on cryptocurrency exchanges and requires real-name verification for trading accounts.
- **India:** India has taken a cautious approach towards cryptocurrencies, with the government considering various regulations. In 2018, the Reserve Bank of India (RBI) banned banks from providing services to cryptocurrency businesses, but the Supreme Court lifted the ban in 2020.
- Australia: Australia has implemented AML regulations on cryptocurrency exchanges and requires them to register with the Australian Transaction Reports and Analysis Centre (AUSTRAC).
- **Singapore:** Singapore has a generally permissive approach to cryptocurrencies, with regulations focused on AML and CFT measures for certain cryptocurrency businesses.

It's important to note that regulations are continuously evolving, and some countries may have changed their stance or introduced new regulations since my last update. Additionally, some countries have taken a wait-and-see approach, and their stance towards Bitcoin and cryptocurrencies may not be explicitly defined.

As the cryptocurrency market grows and gains more mainstream attention, regulatory authorities around the world are likely to continue developing and updating regulations to address potential risks and protect consumers and investors.

Regulations of Bitcoin market in india

- **Cryptocurrency Ban (RBI Circular):** In April 2018, the Reserve Bank of India (RBI) issued a circular that prohibited banks and financial institutions from providing services to individuals and businesses dealing with cryptocurrencies. This circular effectively led to a ban on the use of banking channels for cryptocurrency trading and transactions.
- **Supreme Court Ruling:** In March 2020, the Supreme Court of India struck down the RBI circular, declaring it unconstitutional. The ruling lifted the banking ban on cryptocurrency transactions, allowing individuals and businesses to resume cryptocurrency trading through banking channels.
- **Crypto Regulation and Taxation Discussions:** After the Supreme Court ruling, there were discussions within the Indian government about introducing regulations for cryptocurrencies. The government was considering the possibility of classifying cryptocurrencies as an asset class and imposing taxation on cryptocurrency transactions.
- **Crypto Regulation Bill:** In early 2021, reports emerged about the Indian government planning to introduce the "Cryptocurrency and Regulation of Official Digital Currency Bill," which aimed to create a legal framework for regulating cryptocurrencies in India. The bill proposed to ban private cryptocurrencies while allowing the development of a central bank digital currency (CBDC).
- **Public Consultation and Stakeholder Feedback:** The Indian government indicated that it would seek public consultation and gather stakeholder feedback on the proposed cryptocurrency bill before finalizing any regulations.
- **Uncertain Regulatory Environment:** The regulatory environment for cryptocurrencies in India remains uncertain, and traders and businesses operating in the cryptocurrency space are advised to stay updated on regulatory developments.

It's essential to note that regulations can change rapidly, and there might have been updates or changes in the regulations since my last update in September 2021. Always check with the latest government announcements, official sources, and legal experts to stay informed about the current regulatory status of cryptocurrencies in India.

As the Indian government continues to explore the regulatory framework for cryptocurrencies, the industry's future in the country remains subject to the evolving regulatory landscape.

Types of cryptocurrencies traded in market

In the cryptocurrency market, there is generally only one type of "Bitcoin" that is traded, which refers to the original Bitcoin (BTC) created by Satoshi Nakamoto in 2009. Bitcoin is the first and most well-known cryptocurrency, often referred to as "digital gold" or "digital currency."

However, it's essential to clarify that there are other cryptocurrencies, often called "altcoins" (alternative coins), that are traded alongside Bitcoin in the cryptocurrency market. These altcoins are separate digital currencies, each with its own unique features and use cases. Some of the popular altcoins include:

- **Ethereum (ETH):** Ethereum is a decentralized platform that enables the creation of smart contracts and decentralized applications (DApps).
- Ripple (XRP): Ripple is a digital payment protocol that aims to facilitate fast and low-cost cross-border transactions.
- **Litecoin (LTC):** Litecoin is a peer-to-peer cryptocurrency that was created as a "lighter" version of Bitcoin, with faster block generation times.
- **Bitcoin Cash (BCH):** Bitcoin Cash is a cryptocurrency that forked from the original Bitcoin blockchain, aiming to increase the block size for faster and cheaper transactions.
- **Cardano (ADA):** Cardano is a blockchain platform that aims to provide a more secure and scalable infrastructure for smart contracts and DApps.
- **Polkadot (DOT):** Polkadot is a multichain blockchain platform that facilitates interoperability between different blockchains.
- **Chainlink (LINK):** Chainlink is a decentralized oracle network that connects smart contracts with real-world data.
- **Stellar (XLM):** Stellar is a platform that focuses on facilitating cross-border transactions and connecting financial institutions.

These are just a few examples of the many altcoins available in the cryptocurrency market. Each altcoin serves a different purpose and offers unique features, creating a diverse and competitive landscape within the crypto space.

When trading on cryptocurrency exchanges, you can find various trading pairs that involve Bitcoin as one of the base currencies. For example, you can trade BTC/ETH, BTC/XRP, BTC/LTC, and so on, which means you are exchanging Bitcoin for the respective altcoin or vice versa. Bitcoin remains the dominant cryptocurrency in terms of market capitalization and trading volume and is often used as a reference point for the overall performance of the cryptocurrency market.

What are the future opportunities for cryptocurrency?

The future of cryptocurrency in India looks promising, with growing adoption rates among millennials and Gen Z. Despite initial skepticism, cryptocurrencies are gaining traction, particularly among young investors who are drawn to the thrill of volatility and the convenience of digital technology. The rise of peer-to-peer (P2P) platforms has further facilitated the adoption of cryptocurrencies, especially among the tech-savvy population. Notably, women's participation in crypto trading has surged by over 1000% in recent years, indicating a shift towards greater

inclusivity. With 66% of users under the age of 35, it's clear that younger generations are driving the growth of cryptocurrencies in India. While regulatory uncertainty persists, the government's recognition of cryptocurrencies' potential bodes well for future mainstream acceptance. As cryptocurrencies continue to penetrate niche segments, they are poised to become an integral part of India's financial landscape

Conclusion:

The cryptocurrency market has demonstrated remarkable resilience and growth, despite regulatory uncertainty and market volatility. As the market continues to evolve, it is crucial to address the challenges and opportunities that lie ahead. Future directions for cryptocurrency adoption include increased mainstream acceptance, improved regulatory clarity, and the development of new use cases and applications. As the cryptocurrency market continues to mature, it is likely to play an increasingly important role in the global financial landscape.

References:

1. Antonopoulos, A. M. (2014). Mastering Bitcoin: Unlocking digital cryptocurrencies. O'Reilly Media.
2. Bohme, R., Christin, N., Edelman, B., & Moore, T. (2015). Bitcoin: Economics, technology, and governance. Journal of Economic Perspectives, 29(2), 213-238.
3. Chiu, J., & Koeppl, T. V. (2017). The economics of Bitcoin. Economic Review, 102(2), 1-15
4. Gandal, N., & Halaburda, H. (2016). Can we predict the winner in a market with network effects? Competition in cryptocurrency market. International Journal of Industrial Organization, 46, 1-15.
5. Yermack, D. (2015). Is Bitcoin a real currency? An economic appraisal. Handbook of Digital Currency, 31-43.
6. Link : https://timesofindia.indiatimes.com/blogs/voices/the-evolution-of-cryptocurrencies-in-india-and-what-the-future-looks-like/
7. https://www.gadgets360.com/finance/bitcoin-price-history
8. https://www.forbes.com/advisor/in/investing/cryptocurrency/crypto-bill/
9. https://www.forbes.com/advisor/in/investing/cryptocurrency/bitcoin-trading/
10. https://www.forbes.com/advisor/in/investing/cryptocurrency/how-to-earn-bitcoin/
11. https://www.forbes.com/advisor/in/investing/cryptocurrency/crypto-bill/
12. https://www.investopedia.com/articles/forex/121815/bitcoins-price-history.asp
13. https://www.bankrate.com/investing/bitcoin-price-history/
14. https://en.wikipedia.org/wiki/History_of_bitcoin
15. https://www.statista.com/statistics/730876/cryptocurrency-maket-value/

Progressive Research in Humanities, Social Sciences, Commerce and Management Volume I (ISBN: 978-93-95847-65-0)

About Editors

Ms. Sugandha Agarwal is currently working as Assistant Professor in the Department of Commerce, National Post Graduate College, Lucknow, U.P. She is specialized in Economics, Finance, Banking and International Business. She completed her Post graduation from Rohilkhand University. For the past 13 years, she has been involved in senior secondary and undergraduate teaching. She has published many research papers and case studies and chapters in the International as well as national journals.

Dr. Pranati Misra is currently working as Assistant Professor in the Department of Commerce, National Post Graduate College, Lucknow, U.P. She is specialized in HR, Marketing, Finance and International Business. She is recipient of Senior Research Fellowship from UGC for her doctoral degree from University of Lucknow. From past 10 years, she is involved in Undergraduate and post graduate teaching. She has guided as member of advisory committees to the Post graduate students of various disciplines.

Dr. Ankita Jaiswal, Assistant Professor in the Department of Management studies, National Post Graduate College, Lucknow, is a distinguished academician with more than ten years of teaching experience in the field of Marketing, Human Resource Management, Audit, Business Environment and Organizational Behaviour. She has received Doctoral degree in Business Administration from University of Lucknow. Ms. Jaiswal has presented various research papers in national and international Conferences. Her academic works and publications include topics such as Value-creation, Experiential Value, Self-service technology etc. published in the journals of national and international repute.

Dr. Radhika Sharma is currently working as an Assistant Professor in the Department of Commerce, National Post Graduate College, Lucknow. She completed her PhD. in Consumer Behaviour (Marketing) for University of Lucknow. She has a myriad of experience in teaching Business Communication, Business Environment, Marketing, Service Marketing and Consumer Behaviour at the Undergraduate and Postgraduate level. She has a number of publications in reputed journals and books to her credit. An academician to the core, she firmly believes in the advancement of research.

Miss. Osceen Mishra is currently working as an Assistant Professor in National Post Graduate College. She is also pursuing her PhD from Dr. Shakuntala Misra National Rehabilitation University, Lucknow in Marketing. She has published several chapters and papers in reputed journals and takes an active interest in introducing new pedagogical techniques. With over, seven years of teaching Economics, Business Communication, Indian Economy at the under graduate level, Miss Osceen has played a pivotal role in developing e-content in these areas. Miss Osceen is also an entrepreneur and has taken her creative streak to new heights with passion and devotion.

Bhumi Publishing

ISBN 978-93-95847-65-0
9 789395 847650