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Chief Editor

Rev. Dr. Dominic Savio, SJ, Principal

St. Xavier's College (Autonomous), Kolkata

30 Mother Teresa Sarani, Kolkata-700016

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A Multidisciplinary Journal

"Research is to see what everybody else has seen and think what nobody has thought."

- Albert Szent-Gyorgyi

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A Peer-Reviewed Multidisciplinary Journal

Message from Chief Editor

It gives me great satisfaction to present the 2026 volume of **Aviskaar: A Xaverian Journal of Research**, which reflects the sustained commitment of our institution to rigorous scholarship, intellectual openness, and social responsibility. The range and depth of the contributions in this volume bear testimony to a research culture that continues to mature—one that is attentive to contemporary realities while remaining rooted in enduring values.

The articles included in this volume engage meaningfully with some of the most pressing concerns of our times. Studies on financial literacy, investment behaviour among young adults, and economic understanding at the secondary education level draw attention to the growing need for informed decision-making in an increasingly complex economic environment. Such work reinforces the role of education not merely as the transmission of knowledge, but as the formation of responsible and discerning citizens.

Equally significant are the contributions that examine the impact of digital transformation on learning, consumption, and sustainability. The discussions on online consumer behaviour and the use of artificial intelligence in higher education invite thoughtful reflection on how technology can be harnessed in ways that promote inclusion, quality, and ethical accountability. In addressing these issues, the authors align academic inquiry with the broader objectives of sustainable development and social equity.

What is particularly heartening in this volume is the presence of scholarship that bridges empirical research with philosophical and spiritual reflection. Explorations into environmental responsibility, sustainable tourism, and the spiritual traditions of Bhakti Yoga remind us that human progress cannot be measured solely in economic or technological terms. True development must also nurture values, ecological sensitivity, and a sense of purpose.

Aviskaar has always sought to provide a platform for multidisciplinary dialogue, and the present volume reaffirms this mission. I extend my sincere appreciation to all the contributors, reviewers, and members of the editorial team whose dedication has made this publication possible. I am confident that the research presented here will stimulate thoughtful engagement and contribute meaningfully to academic and societal discourse.

May this volume inspire continued collaboration, deeper inquiry, and a renewed commitment to knowledge in the service of humanity.

Rev. Dr. Dominic Savio, SJ
Principal, St. Xavier's College (Autonomous), Kolkata

Message from Managing Editor

It is my privilege to present the 2026 volume of **Aviskaar: A Xaverian Journal of Research**, which reflects the journal's continued commitment to methodologically sound, socially relevant, and multidisciplinary scholarship. The present volume has been shaped through a structured editorial process in alignment with UGC norms and established standards of academic publishing.

The articles included in this volume engage with a wide spectrum of contemporary concerns. Empirical studies on financial literacy in higher education, investment behaviour among Generation Z, and the role of economics in secondary education underscore the growing importance of economic awareness and informed decision-making in today's society. These contributions highlight the relevance of economic education not only as an academic discipline, but as a foundational skill for responsible citizenship. The volume also addresses the impact of digital transformation on consumer behaviour and learning environments. Analyses of online shopping dynamics and the role of artificial intelligence—particularly tools such as ChatGPT—in higher education offer critical insights into how technology reshapes engagement, access, and pedagogical practices. These discussions are complemented by research that examines the ethical and sustainability dimensions of technological adoption, especially in sectors such as tourism and education. An important strength of this volume lies in its inclusion of scholarship that extends beyond conventional empirical inquiry. Contributions exploring spiritual philosophy, environmental consciousness, and ecological responsibility provide reflective perspectives on sustainability and ethical action. In addition, the reassessment of dependency theory through a global political economy lens reinforces the journal's commitment to critical and context-sensitive analysis of development and inequality.

The successful completion of this volume has been made possible through the collective efforts of reviewers and the editorial team. I acknowledge with appreciation the sustained editorial coordination and academic diligence of **Dr. Tapalina Bhattasali**, whose role in managing the review process and ensuring scholarly coherence has been instrumental.

Aviskaar continues to serve as a multidisciplinary platform that facilitates collaboration among faculty members, researchers, and students across domains. We welcome contributions that demonstrate conceptual clarity, methodological rigor, and relevance to contemporary academic and societal challenges, particularly those adopting interdisciplinary approaches to complex real-world issues. Scholarly publishing is inherently collaborative. It is through shared responsibility and sustained engagement that academic quality and institutional research culture are strengthened.

Amitra.

Dr. Arup Kumar Mitra

Message from Associate Editor

I am pleased to be associated with the publication of the 2026 volume of **Aviskaar: A Xaverian Journal of Research.** The journal continues to strengthen its position as a multidisciplinary academic platform that promotes rigorous inquiry, ethical research practices, and meaningful engagement with contemporary issues.

I gratefully acknowledge the academic leadership and institutional support extended by the Principal, **Rev. Dr. Dominic Savio, SJ,** whose sustained encouragement of research and innovation has contributed significantly to the journal's evolving academic standards. I also express my sincere thanks to **Dr. Arup Kumar Mitra** for his guidance and support in ensuring a systematic, transparent, and academically robust editorial process.

The present volume reflects a wide spectrum of scholarly concerns that are both timely and socially relevant. Contributions addressing financial literacy in higher education, investment behaviour among Generation Z, and the pedagogical role of economics at the secondary level underscore the importance of economic understanding in shaping informed and responsible decision-making. Studies on online consumer behaviour and the application of artificial intelligence in higher education critically examine the implications of digital transformation for learning, access, and ethical accountability. Equally significant are the contributions that engage with sustainability, environmental responsibility, and spiritual–philosophical perspectives. Research on sustainable wildlife tourism, ecological action informed by spiritual wisdom, and Bhakti Yoga within Gaudiya Vaishnavism offers reflective insights that complement empirical inquiry. The inclusion of a reassessment of dependency theory within the framework of global political economy further reinforces the journal's commitment to critical, context-sensitive scholarship.

The editorial and review processes for **Aviskaar 2026** have been conducted in strict adherence to UGC guidelines for peer-reviewed journals, including clearly defined editorial roles, rigorous plagiarism screening, and a structured double-blind peer-review mechanism to ensure academic integrity, transparency, and objectivity.

I extend my appreciation to all members of the Editorial Board for their valuable academic inputs. I also sincerely thank the internal and external reviewers whose expert evaluations and constructive feedback have been instrumental in maintaining the scholarly quality of this volume.

Aviskaar actively encourages interdisciplinary and transdisciplinary research, recognising that complex academic and societal challenges demand integrative approaches and methodological pluralism. I am confident that **Aviskaar 2026** will reflect the research ethos of the Xaverian academic community and contribute meaningfully to wider scholarly discourse.

Dr. Tapalina Bhattasali

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ASSESSING THE INCLUSION OF FINANCIAL LITERACY IN SELECTED HIGHER EDUCATION INSTITUTIONS OF WEST BENGAL: A STUDY

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ABSTRACT

Financial literacy has emerged as a cornerstone for sustainable individual and national economic growth. In an era of globalization, digital transformation, and evolving financial systems, the ability to make informed financial decisions is essential for young adults, particularly those pursuing higher education. The National Education Policy (NEP) 2020 recognizes financial literacy as part of holistic, multidisciplinary, and skill-based learning in India. However, financial literacy remains largely absent from most higher education curricula. This study examines the inclusion of financial literacy in Higher Education Institutions (HEIs) in West Bengal and evaluates educators' perceptions regarding its importance and integration. Adopting a mixed-method approach, the research combines institutional-level analysis with faculty survey data, applying quantitative techniques through Python and SPSS. Findings reveal uneven institutional inclusion, disciplinary disparities, and high faculty support tempered by limited confidence and institutional backing. The paper concludes with recommendations aligned with NEP 2020 to strengthen financial literacy education in HEIs and proposes a roadmap for capacity building and policy implementation.

KEYWORDS. ***Financial Literacy; Higher Education; NEP 2020; Faculty Perception; Institutional Inclusion***

1. INTRODUCTION

Financial literacy refers to the knowledge and skills required to make effective financial decisions about budgeting, saving, investing, and managing credit. It is increasingly regarded as an essential life competency that extends beyond personal welfare to societal and economic stability. The rapid expansion of financial products, the rise of digital banking, and the increasing complexity of financial instruments have created a world in which financial literacy is indispensable for all citizens. Globally, organizations such as the Organisation for Economic Co-operation and Development (OECD) and the World Bank advocate for embedding financial education at all stages of life to ensure that individuals can navigate an uncertain and interdependent financial ecosystem (OECD, 2020; World Bank, 2021).

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In India, the significance of financial literacy has gained national attention following the implementation of the National Education Policy (NEP) 2020. This policy framework promotes holistic learning, skill development, and employability enhancement. It emphasizes that education must not only transmit academic knowledge but also prepare students to meet real-world challenges. Financial literacy forms a key pillar of this approach, aligning with the NEP's objective of creating responsible, capable citizens who can participate productively in the economy. For college students, this includes understanding financial planning, managing educational expenses, avoiding predatory credit, and preparing for future financial independence.

Despite its critical importance, the state of financial literacy among higher education students remains concerning. Studies indicate that a majority of Indian students graduate without adequate understanding of personal finance, debt management, or investment principles (RBI, 2022). While commerce and management students receive some financial exposure, those in science, humanities, and engineering disciplines often have minimal access to structured financial education. As a result, they are vulnerable to poor financial decisions that can affect long-term economic wellbeing. This institutional gap poses a barrier to achieving the NEP 2020 vision of holistic education.

Higher education institutions (HEIs) play a crucial role in addressing this gap. Universities and colleges are not only centres of academic excellence but also spaces where young adults develop life skills and attitudes toward work, consumption, and savings. By integrating financial literacy into their curricula, HEIs can foster habits of responsible financial behaviour that extend into adulthood. Globally, countries such as Australia, the United States, and the United Kingdom have successfully introduced financial education modules in tertiary education to enhance student employability and social awareness. Such global practices offer valuable lessons for Indian HEIs seeking to align with the NEP framework.

This study, therefore, explores the extent to which financial literacy has been integrated into higher education curricula in West Bengal and examines faculty perceptions regarding its relevance. By adopting a dual-level approach—analyzing institutional documents and surveying educators—the research seeks to bridge the gap between policy aspirations and ground realities. The findings are expected to provide evidence-based insights for policymakers, educational leaders, and accreditation bodies such as the University Grants Commission (UGC) to strengthen the role of financial literacy within the broader educational ecosystem.

2. BACKGROUND AND RATIONALE

Over the past two decades, the global discourse surrounding financial literacy has undergone a profound transformation, evolving from a peripheral educational concern into a cornerstone of sustainable economic development. As modern financial systems become increasingly digitalized, decentralized, and interconnected, the need for individuals to develop robust financial literacy skills has gained global recognition as an essential life competency. According to the Organisation for Economic Co-operation and Development (OECD, 2020), financial literacy extends beyond personal budgeting and encompasses financial awareness, knowledge, skills, attitudes, and behaviours necessary to make informed financial decisions. The OECD underscores that financial literacy forms a crucial part of human capital—vital not only for personal well-being but also for fostering economic stability, reducing poverty, and enhancing social inclusivity within nations.

The World Bank (2021) aligns with this view, emphasizing that nations that invest strategically in financial education consistently report higher savings rates, improved debt management, and increased

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entrepreneurship. This is because financial literacy helps individuals confidently engage with formal financial systems, understand credit structures, evaluate risk, and use financial services effectively. Consequently, numerous developed economies such as the United States, the United Kingdom, Singapore, and Australia have institutionalized financial education within their national curricula from primary to tertiary levels. They treat financial competence as an indispensable part of civic education, equipping citizens to navigate dynamic markets and mitigate financial risks.

In the Indian context, the urgency of financial literacy is amplified by the country's evolving digital economy and the widening gap between financial inclusion and actual financial understanding. Several apex institutions—the Reserve Bank of India (RBI), the Securities and Exchange Board of India (SEBI), the Insurance Regulatory and Development Authority of India (IRDAI), and the National Centre for Financial Education (NCFE)—have taken concerted steps through national policies, training workshops, and awareness drives to promote financial education. The **National Strategy for Financial Education (NSFE) 2020–2025**, developed by the NCFE with the support of these regulatory bodies, is a landmark initiative aimed at inculcating financial literacy across diverse sections of society. Built on the "5C" approach (Content, Capacity, Community, Communication, and Collaboration), the NSFE emphasizes embedding financial learning into the national education framework through institutional capacity building and collaborative innovation.

However, despite ongoing government efforts, the mainstream integration of financial education into the formal curriculum remains fragmented and inconsistent. The majority of initiatives operate as short-term outreach programs or as part of co-curricular workshops, lacking a standardized framework or sustainable evaluation mechanism. This issue is particularly evident across non-commerce disciplines, where financial management is often perceived as peripheral rather than foundational. The **National Education Policy (NEP) 2020** presents a transformative policy opportunity to bridge this gap. The policy explicitly identifies financial literacy as part of its larger goal of "life skills education," placing it within the umbrella of **Adult Education and Lifelong Learning**. NEP 2020 advocates a shift from rote learning to applied learning by integrating financial education across school and higher education systems—embedding concepts such as budgeting, savings, investments, and risk management within diverse disciplines.

The University Grants Commission (UGC), in alignment with NEP 2020, reinforces the development of holistic competencies by mandating higher education institutions to incorporate core life skills—including financial literacy and ethical decision-making—into their curricula. Moreover, UGC's revised accreditation frameworks now recognize institutional initiatives that promote financial awareness as indicators of social responsibility and innovation. This marks a crucial turning point, emphasizing that financial capability is no longer optional but a measurable dimension of institutional excellence.

In West Bengal, higher education has historically played a pivotal role in India's intellectual and sociopolitical landscape. The state hosts a vibrant mix of **historic public universities**, such as the University of Calcutta and Jadavpur University, alongside emerging **private institutions**, including Sister Nivedita University and Amity University Kolkata. Yet, the inclusion of financial literacy within their academic structures remains inconsistent. Most universities offer financial education only within commerce and management programs, leaving vast populations of students from science, humanities, and social science backgrounds outside the purview of structured financial training. Moreover, several institutions lack specialized faculty and the resources required to design outcome-based financial education programs that align with the NEP and UGC mandates.

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This context forms the rationale for the present study, which seeks to bridge empirical understanding and policy implementation. The research responds to an identifiable gap between national goals and institutional realities by examining how higher education institutions in West Bengal conceptualize, prioritize, and execute financial literacy initiatives. It investigates whether institutional missions are aligned with NEP 2020 directives and explores the readiness of faculty members to integrate financial literacy within existing academic frameworks.

Fundamentally, the study is predicated on the conviction that improving financial literacy through higher education is not only instrumental in shaping economically responsible citizens but also crucial for building resilient local economies. West Bengal—with its diverse socio-economic fabric—provides a significant regional context to analyse these dynamics. By unravelling the interplay between policy vision, institutional capability, and pedagogical practice, the research seeks to offer actionable recommendations that can guide the systematic integration of financial literacy into higher education curricula across India. This endeavour ultimately aims to strengthen the nation's broader financial inclusion objectives by ensuring that education translates not only into employability but also into sustainable financial empowerment for all citizens.

3. REVIEW OF LITERATURE

Previous studies have explored the multifaceted nature of financial literacy and its educational implications. Hossain and Maji (2021) examined financial literacy in West Bengal using large-scale survey data and reported a low average literacy rate, particularly among women and rural populations. Kaiser et al. (2022) conducted a meta-analysis of 76 randomized experiments globally, finding that financial education significantly improves both knowledge and behaviour. Laha and Kuri (2014) analyzed determinants of financial inclusion in rural Bengal and emphasized the importance of education and awareness. Lusardi and Mitchell (2023) identified financial literacy as a form of human capital that must be integrated into education policy for sustainable economic wellbeing.

Internationally, So-in et al. (2024) studied financial literacy among educators and employees in China and found that financial behavior, knowledge, and attitude strongly correlate with overall literacy. Similarly, Jurkševičiūtė et al. (2023) reported moderate literacy levels among European students, linking financial responsibility to part-time work experience. Other studies such as Galapon and Bool (2021) observed that faculty members with higher financial knowledge display better personal financial health, but institutional support plays a decisive role in sustaining these gains.

Indian research trends echo these global findings. Studies conducted by Laha and Maji (2022) at the University of Burdwan revealed that digital and financial literacy jointly enhance students' participation in the digital economy. Sethy and Goyari (2018) developed a Financial Inclusion Index (FII) for Indian states and stressed the need for region-specific educational strategies. These findings collectively establish financial literacy as a key determinant of economic empowerment and educational relevance.

Author(s) & Year	Focus	Methodology	Key Findings
Hossain & Maji (2021)	Financial literacy in West Bengal	Secondary data; Tobit regression	Low literacy; education and gender matter
Kaiser et al. (2022)	Global financial education impact	Meta-analysis of 76 RCTs	Positive effect on knowledge & behavior

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Laha & Kuri (2014)	Financial inclusion determinants	Probit regression	Awareness & banking penetration crucial
Lusardi & Mitchell (2023)	20 years of literacy research	Review study	Financial literacy as human capital
Sethy & Goyari (2018)	Financial inclusion in Indian states	Index development	Need for region-specific strategies
Jurkševičiūtė et al. (2023)	Student financial literacy	Survey, SPSS	Work experience enhances responsibility
Galapon & Bool (2021)	Financial health of faculty	Descriptive-correlational	Knowledge affects wellbeing
So-in et al. (2024)	Educator attitudes in China	Regression analysis	Attitude & knowledge predict behavior
Laha & Maji (2022)	Digital-financial synergy	Survey; regression	Digital literacy boosts engagement
OECD (2020)	Policy guidelines	Comparative framework	Emphasizes financial education globally

4. RESEARCH METHODOLOGY

This research adopted a mixed-method quantitative approach combining institutional content analysis with faculty perception surveys. Twelve HEIs in West Bengal were purposively selected to represent public, private, autonomous, and deemed universities. Nineteen financial literacy indicators were analyzed under six broad categories: curriculum integration, awareness initiatives, decision-making skills, employability orientation, policy support, and lifelong learning.

Python libraries such as Pandas, NumPy, and Scikit-learn were used for descriptive statistics, ANOVA, Chi-Square, and Principal Component Analysis. SPSS was employed to analyze 105 faculty survey responses using regression, ANOVA, and reliability tests. Cronbach's alpha for inclusion indicators was 0.495, indicating moderate reliability. The dual-software approach ensured analytical rigor and transparency.

5. FINDINGS AND DISCUSSION

Institutional analysis revealed substantial variation in financial literacy inclusion across HEIs. Public and private universities demonstrated higher integration levels than autonomous colleges. Commerce and management faculties had almost universal inclusion, while science and humanities lagged behind. Only 42% of surveyed HEIs offered any structured financial literacy course beyond elective workshops.

Institution Type	Average FL Inclusion Score	Integration Mode
Public University	78%	Core & Co-curricular
Private University	72%	Skill Module & Workshop

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Autonomous College	58%	Optional Seminar
Deemed University	69%	Integrated Life Skill Course

Principal Component Analysis identified two latent dimensions: (1) curricular integration and (2) institutional support mechanisms. ANOVA results showed significant variance ($p<0.05$) in inclusion scores across institution types. Chi-Square tests confirmed that financial literacy presence was significantly associated with institutional category and funding type. These results underscore systemic disparities that require policy-level standardization.

Faculty survey analysis demonstrated strong consensus on the importance of financial literacy. About 87% of respondents supported mandatory inclusion, but only 41% felt confident teaching it. Regression results indicated that institutional training ($\beta=0.42$, $p<0.01$) and personal familiarity ($\beta=0.33$, $p<0.05$) were significant predictors of willingness to teach financial literacy. Faculty from commerce disciplines scored higher on confidence but showed similar enthusiasm for interdisciplinary collaboration.

Variable	**β Coefficient**	**p-value**	**Interpretation**
Institutional Training	0.42	<0.01	Strong positive predictor
Familiarity with FL	0.33	<0.05	Moderate effect
Confidence Level	0.28	<0.05	Influences teaching willingness
Discipline Type	0.17	ns	Minor effect, not significant

Qualitative responses from faculty indicated barriers including limited time, insufficient resources, and lack of institutional coordination. However, there was broad recognition that financial literacy supports employability and aligns with NEP's emphasis on life skills. Several faculty members suggested collaborative modules across departments and partnerships with financial institutions for experiential learning.

6. CONCLUSION AND RECOMMENDATIONS

The study highlights that financial literacy inclusion in HEIs of West Bengal is in its nascent stage. While awareness and intent are evident, systemic mechanisms for integration remain underdeveloped. Faculty enthusiasm provides a foundation for progress, but institutional inertia and inadequate policy translation impede reform. To align with NEP 2020, HEIs must prioritize financial literacy as an essential skill area, supported by targeted capacity building and policy incentives.

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RECOMMENDATIONS

1. ***Policy-Level Interventions***
    - Mandate foundational financial literacy components across all Higher Education Institutions (HEIs) from national and state authorities.
    - Develop a flexible, adaptable framework that sets minimum standards but allows discipline-specific customization.
    - Link these policies explicitly to NEP 2020, emphasizing FL as a vital life skill and employability tool.
2. ***Institutional Strategies***
    - Move beyond curriculum-only approaches to holistic integration including interdisciplinary modules and experiential learning such as workshops, internships, and outreach programs.
    - Develop clear assessment and measurement frameworks to ensure genuine learning outcomes and not just symbolic inclusion.
3. ***Faculty Development***
    - Establish systematic capacity-building programs, including workshops, refresher courses, and digital modules, to enhance faculty confidence and pedagogical skills.
    - Focus on technical financial knowledge and mentoring skills to stimulate positive financial attitudes and behaviours among students.
4. ***Student-Centred Approaches***
    - Encourage practical application of financial concepts through simulations, digital platforms, entrepreneurial activities, and community campaigns.
    - Integrate FL into co-curricular activities, fostering it as a lifelong skill relevant to personal and professional growth.
5. ***Cross-Disciplinary Endorsement:***
    - Promote the support for FL across various disciplines—Commerce, Science, Engineering, Humanities—as a fundamental life skill.
    - Align curriculum design with this cross-disciplinary support, embedding FL as a core competency.
6. ***Support for Faculty Training:***
    - Recognize high faculty willingness (about 79%) to undergo FL training but address the lack of institutional programs (only 39% reported none) by establishing ongoing, structured training systems.
7. ***Empowering Educators:***
    - Increase familiarity and participation in FL training through orientation and continuous professional development (CPD) programs to foster faculty champions within institutions.

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8. ***Enhancing Policy & Awareness:***
    - Improve awareness of NEP 2020's emphasis on FL through active communication via workshops, circulars, and curriculum guidelines.
    - Utilize the supportive attitude of faculty to accelerate implementation.
9. ***Harnessing Systemic Opportunities:***
    - Recognize the current support among faculty as an opportunity to embed FL seamlessly.
    - Act promptly to prevent momentum loss and bridge the gap between policy intent and operational execution.
10. ***Strategic Implementation:***
    - Develop institutional, state, and national strategies with ongoing monitoring, evaluation, and feedback loops.
    - Use existing faculty motivation to embed FL systematically rather than through ad-hoc initiatives.

Embedding financial literacy into higher education is not merely an academic reform but a social investment. It contributes to national economic stability, enhances employability, and cultivates responsible citizenship. Future studies should extend this analysis across states and include longitudinal assessments of student financial behaviour.

Connection to the Research

Motive The motive of this research was to provide evidence-based insights into whether financial literacy is ready to be integrated into HEIs in West Bengal and how it can be effectively implemented**.** The results affirm that: 1. Educators value FL as essential for employability, entrepreneurship, and personal financial well-being, directly supporting the NEP 2020 vision of holistic and skill-oriented education. 2. Faculty readiness exists but must be supported by institutional and policy-level interventions, aligning with the study's aim to identify gaps between perception and practice. 3. The lack of structured programs underscores a pressing need for curriculum-level reforms, fulfilling the study's objective of providing practical recommendations for integration.

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UNDERSTANDING GEN Z'S INVESTMENT CHOICES: A MIXED-METHODS ANALYSIS THROUGH THE LENS OF THE THEORY OF PLANNED BEHAVIOUR

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ABSTRACT

The study examines investment intentions and initiatives among Zoomers who are in age group of 18 to 25. The study uses a mixed methods approach based on the Theory of Planned Behaviour (TPB). 400 participants in total completed an adaptive TPB-based survey aimed at financial literacy and bias awareness. The study concludes that investment intent is strongly influenced by positive investment attitudes and self-efficacy by implementing Latent Class Analysis (LCA) and Structural Equation Modelling (SEM). Consistent gains in intent and confidence in investment behaviour have been witnessed through interventions over the course of a year (1st September 2024 to 31st August 2025). Gen Z's multifaceted and evolving investing tendencies has been exposed by the study which is evidenced from their formation of the subjective norms and risk appetite through social and digital influences.

KEYWORDS. ***Gen Z; Investment Decision-Making; TPB; Adaptive Survey; Structural Equation Modelling; Behavioral Bias; Longitudinal Study***

1. INTRODUCTION

The investment environment is under the process of transformation under the influence of Gen Z, who are considered to be the first digital native generation. Shifting the focus from the traditional approaches and models, Gen Z's are now approaching their investment journeys through their prudent risk-taking abilities, social network influences and digital curiosities. It is therefore important to understand what influences the investment perceptions and decisions of these Gen Z's, more importantly as they find themselves in a volatile economic environment which is flooded with both information and misinformation or noises. The study attempts to combine the predictive power of the Theory of Planned Behavior (Ajzen, 1991), practical behavioural interventions, and sound quantitative and qualitative methods. Along with an attempt to present the facts about Gen Z's investment perception, habits and motivations the study also aims to identify how interventions can help them become more skilled and confident investors. The study will not only influence investment markets and public policy making but will also educate Gen Z and all future generations. The study employs human-centered, mixed methods approach which is likely to shed light on the needs, gaps, risk and future investment dreams of Generation Z.

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2. REVIEW OF LITERATURE

Table 1. Review of Literature

Theme	Author & Year	Findings
Gen Z – A Generation In Transition	Savithri & Rajakumari (2025)	Gen Z Investors Mostly Allocate A Considerable Portion Of Their Savings In Various Assets Which Includes Stocks, Mutual Funds, Exchange Traded Funds, Cryptocurrencies And Digital Coins. This Indicates That This Generational Cohort Is Inclined Towards Participating In Capital Market And Takes Considerable Number Of Risks.
	Cfa Institute & Finra (2023)	Gen Z Are Heavily Influenced By Social Media And Peers. This Has Been Evidenced By This Cross-Regional Survey (Us, Uk, Canada, China). The Study Also Shows That Gen Z Enter Investment World Early Compared To Their Previous Generations. The Study Also Finds That Gen Z Investors Are Hugely Engulfed In Fear Of Missing Out, And Majorly Influenced By Crypto And Digital Currencies Play A Key Role In Their Investment Decisions.
	Lusardi And Mitchell (2014) And Sharma Et Al. (2024)	Gen Z Favours Short-Term, Liquid Assets Like Stocks And Cryptocurrencies In Order To Satisfy Their Demand For Quick Returns And Easy Access.
	Gutter Et Al. (2010)	The Study Identifies That Due To Macroeconomic Instability Which Are Been Experienced By The Gen Z When They Were Children, This Generational Cohort Are Risk Averse. The Study Posed A Contradiction And Its Findings Deviated From The Previous Literatures Which Required Further Attention To The Diversity Of Gen Z's Investment Preferences.
	Brown Et Al., 2023	The Study Clarified That Gen Z Investors Are Not A Single Entity But It Rather Consists Of Sub-Groups Which Has Its Distinct Motivations And Traits. The Study Utilised Latent Class And Segment Focused Analyses. These Sub-Groups Exhibit Diverse Levels Of Risk Tolerance, Social Engagements And Financial Literacy Which Are Evidenced From Their Profiles Such As "Risk-Adaptive Pragmatists," "Socially Influenced Learners," And "Cautious Novices". The Study Directs Robust Plans For Educational Packages, Tactics

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		And Platform Designs Which Must Be Tailored To Accommodate A Variety Of Needs Due To This Heterogeneity.
Role Of Financial Literacy And Risk Tolerance	Nag (2022) And Sharma Et Al. (2024)	The Researchers Found A Strong Positive Correlation Between Literacy Levels And Confidence And Investment Intention.
	Kumar And Singh (2023)	The Study Identified The Importance And Mediating Role Of Financial Literacy On Attitudes And Perceived Behavioural Control On Investment Intentions. The Researchers Also Underscore The Vital Role That Education Plays In Encouraging Self-Directed Investing. Investment Behaviour Is Also Significantly Been Moderated By Risk Tolerance. The Study Found That Greater Tolerance Is Linked To Greater Investment Confidence. The Study Promotes The Idea Of Interventions Which Raises Risk Awareness And Financial Literacy To Test This Interdependence
Theory Of Planned Behaviour (Tpb) In Financial Context	Ajzen's (1991)	Theory Of Planned Behaviour Is An Important Theoretical Framework Which Helps To Understand Investment Intentions And Investment Behaviour. Attitudes, Subjective Norms And Perceived Behavioural Control Influences Investment Intention Which In Turn Influences Investment Behaviour.
	Nag (2022)	The Researcher Demonstrated How Financial Literacy Enhances Attitudes And Perceived Control, Both Of Which Have An Impact On Investment Intentions, Using Partial Least Squares Sem.
	Charlotte And Shruti (2025)	The Researchers Claims That Subjective Norms Have Less Of An Impact On Gen Z Investment Decisions Than Attitude And Perceived Behavioral Control.
	Pašiušienė Et Al. (2023)	Assert That Gen Z's Investment Attitudes And Behaviours Are Greatly Influenced By Social Media, Peer Networks, And Financial Influencers. These Elements Have The Potential To Promote Fomo And Herd Mentality In Addition To Having A Beneficial Impact Through The Spread Of Education.
	Joshi And Nair (2023)	The Researchers Claimed That Youtube And Fintech Apps Are The Main Sources Of Investment Advice For Generation Z, Which Is Used In Addition To Traditional Advisory Services.

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Social And Digital Influences On Investment Decisions	Mehta & Sharma, 2024	The Researchers Are Of The Opinions That Digital Exposures Can Make People More Susceptible To Behavioral Biases Thus Targeted Educational Interventions Are Required.
Behavioral Biases And Decision-Making	Kumar Et Al. (2024)	The Researchers Identified That Overconfidence Causes Novice Gen Z Investors To Underestimate Their Risks.
	Joshi & Nair, 2023	Herding Behavior Is Exacerbated By Peer Pressure From Social Media, Especially In Volatile Asset Classes Like Cryptocurrencies
	Sharma Et Al., 2024	The Researchers Identified The Fact That Characteristics Like Impulsivity And Anxiety Exacerbate Bad Decisions Emphasizes The Necessity Of Integrated Bias-Awareness Training In Investor Education Programs
Educational Interventions And Behavioral Change	Charlotte And Shruti's (2025)	According To The Study And Evaluation Of Experimental Design, Post-Literacy And Bias-Awareness Modules Significantly Increase Perceived Behavioral Control And Intention, Supporting Causal Claims About The Efficacy Of Education
	Mehta And Sharma (2024)	The Researchers Claim That Interactive, Gamified Financial Education Encourages Sustained Engagement And Knowledge Retention. These Findings Lend Credence To The Continued Development And Expansion Of Platforms For Adaptive Learning Targeted At Inexperienced Investors.
Methodological Advances In Studying Gen Z Investment Behavior	Ajzen, 1991; Nag, 2022; Charlotte & Shruti, 2025	Recent Studies Highlight The Importance Of Mixed-Method Designs That Include Surveys, Qualitative Focus Groups, Experimental Modules, And Longitudinal Tracking In Order To Capture The Complexity Of Gen Z Investment Decision Making
	Brown, 2015; Tabachnick & Fidell, 2019	Structural Equation Modelling And Latent Class Analysis Enhance Explanatory Power Beyond Cross-Sectional Correlational Studies By Exposing Subgroup Distinctiveness And Facilitating Comprehensive Testing Of Theoretical Models
Investor Segmentation (Lca Evidence)	Brown Et Al. (2023)	Latent Class Analysis Shows Gen Z Splits Into Distinct Subgroups: “Risk-Adaptive Pragmatists,” “Socially Influenced Learners,” “Cautious Novices.”

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	Rodrigues & Gopalakrishna (2023)	Big Five Personality Traits Affect Financial Risk Tolerance; Gen Z & Millennials Show Higher Risk Appetite Than Older Cohorts.

Source: Author's own compilation

3. RESEARCH GAP

- Prior studies rarely blend adaptive, experimental, and longitudinal methods in one design.
- Most overlook qualitative evidence and subgroup heterogeneity within Gen Z.
- Few directly test the effectiveness of real-time educational/bias-reduction interventions on investment intentions.

4. OBJECTIVES OF THE STUDY

- To analyze Gen Z's investing behavior through TPB constructs in an adaptive, validated framework.
- To understand the direct and moderated effects of financial literacy and bias-reduction interventions.
- To uncover investor segments via LCA.
- To track changes in attitudes, intentions, and behavior over 12 months. (1st September 2024 to 31st August 2025)

5. HYPOTHESES

- H01: Attitude towards investment has no significant effect on the investment intention of Gen Z investors.
- H02: Perceived behavioural control does not significantly influence the investment intention of Gen Z investors.
- H03: Subjective Norms (social and peer influences) do not significantly effect on the investment intention of Gen Z investors.
- H04: Financial literacy does not mediate the relationship between Attitude, Perceived Behavioural Control and Investment Intention.
- H05: Risk Tolerance has no significant effect on the investment intention on Gen Z investors.
- H06: There is no significant difference in investment intention scores between pre- and post-intervention groups.
- H07: The effect of educational interventions on investment intention does not sustain over time.
- H08: The Gen Z investor population is homogeneous and does not exhibit distinct behavioral subgroups.

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6. RESEARCH METHODOLOGY

6.1 Research Design

This is a longitudinal, mixed-methods study combining adaptive survey, RCT intervention arm, focus groups, and follow-up assessments.

6.2 Sampling

- Sample: 400 Gen Z (18–25) investors, stratified by gender, geography, digital literacy.
- Recruitment: Online, with outreach via higher education institutions and digital platforms.

6.3 Instrumentation

- Adaptive TPB Survey: Validated and psychometrically tested for clarity, reliability, and digital accessibility.
- Randomized Interventions:
    - Financial Literacy (interactive modules)
    - Behavioral Bias (FOMO/herd) awareness (case-based training)
    - Control (no intervention)
- Focus-Groups: 5–7 groups (6–8 participants each), probing digital, peer, and emotional context of financial decisions.

6.4 Data Collection Procedures

- Phase 1: Baseline survey & intervention assignment (SPSS/AMOS for all statistical modelling).
- Phase 2: Focus groups (transcribed and thematically coded).
- Phase 3: 12-month panel survey to assess sustained effects.

6.5 Data Analysis

- SPSS 28: Descriptive stats, reliability, ANOVA, regression, t-tests, LCA.
- AMOS 28: SEM and Confirmatory Factor Analysis.
- Qualitative: Thematic content analysis using NVivo.

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7. ANALYSIS AND FINDINGS

7.1 Respondent Profile

Table 2. Respondents Profile

Variable	Category	Frequency	Percentage
Gender	Male	192	48%
	Female	208	52%
Age Group	18–20	180	45%
	21–23	140	35%
	24–25	80	20%
Education	Undergraduate	250	62.5%
	Postgraduate	120	30%
Geography	Urban	293	73.3%
	Rural/Semi-Urban	107	26.7%

Source: SPSS descriptive module.

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7.2 Investment Criteria & Motivations

Table 3. Distribution of Criteria Prioritized

Criteria	Frequency	Percentage
Potential Return	300	75%
Low Risk Level	268	67%
Social Influence	180	45%
Tax Benefits	172	43%
Ethical Considerations	152	38%

Motivation	Frequency	Percentage
Financial Security	310	77.5%
Wealth Accumulation	295	73.8%
Retirement Planning	185	46.2%
Education/Other	95	23.8%

Source: Author's Compilation from the dataset

7.3 TPB MODEL AND RELIABILITY

To ensure the robustness of the TPB constructs, a two-step approach of measurement validation and structural modelling was undertaken. Cronbach's Alpha ranged between 0.82 to 0.89 across Attitude,

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Subjective Norms, Perceived Behavioural Control and Intention and thus exceeded the recommended threshold limit of 0.7. This established the reliability and validity. Convergent validity is been confirmed by Average Variance Extracted (AVE) values ranging between 0.58 to 0.66. Additionally, composite reliability (CR) values were also satisfactory (between 0.84 to 0.91). Fornell-Larcker criterion with each construct's square root of AVE greater than its inter-construct correlations established the Discriminant validity. ***(See Table 4A and 4B)***

Table 4A. Reliability and Convergent Validity (SPSS/AMOS Output)

Construct	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Attitude (ATT)	0.87	0.89	0.64
Subjective Norm (SN)	0.82	0.84	0.58
Perceived Behavioural Control (PBC)	0.89	0.91	0.66
Investment Intention (II)	0.85	0.88	0.61
Financial Literacy (FL)	0.84	0.87	0.60
Risk Tolerance (RT)	0.83	0.86	0.59

Source: Author's computation using SPSS (Reliability Analysis) and AMOS (CFA output). *Note: All constructs exceed the recommended thresholds (α > 0.70; CR > 0.70; AVE > 0.50), confirming internal consistency and convergent validity.*

Table 4B. Discriminant Validity (Fornell–Larcker Criterion)

Construct	ATT	SN	PBC	II	FL	RT
Attitude (ATT)	**0.80**					
Subjective Norm (SN)	0.42	**0.76**				
Perceived Behavioural Control (PBC)	0.49	0.39	**0.81**			
Investment Intention (II)	0.61	0.44	0.57	**0.78**		
Financial Literacy (FL)	0.46	0.41	0.53	0.59	**0.77**	
Risk Tolerance (RT)	0.39	0.36	0.42	0.48	0.44	**0.77**

Note: Diagonal elements (bold) represent the square root of AVE for each construct; all are higher than their respective inter-construct correlations, confirming discriminant validity (Fornell & Larcker, 1981).

Source: *Author's computation using SPSS correlation matrix and AMOS standardized estimates.*
Adequacy of the measurement model with strong fit indices was supported by Confirmatory Factor Analysis (CFA) The strong fit indices are: ***$\chi^2/df = 2.14$, CFI = 0.97, TLI = 0.96, RMSEA = 0.038, SRMR = 0.041****, all within recommended cut-offs, indicating that the hypothesized model provided a good fit to the data.* ***(See Table 4C)***

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Table 4C: Confirmatory Factor Analysis – Model Fit Summary (AMOS 28 Output)

Fit Index	Recommended Threshold	Obtained Value	Interpretation
χ^2 / df	≤ 3.00	2.14	Good fit
CFI (Comparative Fit Index)	≥ 0.90	0.97	Excellent
TLI (Tucker–Lewis Index)	≥ 0.90	0.96	Excellent
GFI (Goodness-of-Fit Index)	≥ 0.90	0.94	Good
AGFI (Adjusted Goodness-of-Fit Index)	≥ 0.80	0.90	Acceptable
RMSEA (Root Mean Square Error of Approximation)	≤ 0.08	0.038	Excellent
SRMR (Standardized Root Mean Square Residual)	≤ 0.08	0.041	Excellent

Source: AMOS 28 (Model Fit Summary; CFA Output using Maximum Likelihood Estimation)

To examine the hypothesized relationships structural equation model (SEM) had been used. The result of the SEM demonstrated that Attitude and Perceived Behavioural control were the strongest predictors of Investment Intention with β= 0.46 and 0.41 respectively at $p<0.001$. A weak significant influence with $\beta = 0.16$ been exerted by Subjective norm at $p = 0.004$. This clearly states that while peer and social cues shape Gen Z's intentions, they are secondary to individual evaluations and self-confidence. Financial literacy emerged as a positive mediator with $\beta = 0.21$, $p<0.001$, magnifying the effects of Attitude and Perceived Behavioral Control. A positive contribution been made by risk tolerance at $\beta = 0.14$, $p = 0.006$. This indicates that confidence in managing risk increases investment intention but is less influential than knowledge or self-efficacy. The model explained 65% of the variance in Intention (Adj. $R^2 = 0.65$), underscoring strong explanatory power. Taken together, these results confirm the robustness of TPB in explaining Gen Z's investment intentions while extending its scope by integrating literacy and risk tolerance as key constructs. The evidence suggests that Gen Z investors are primarily self-driven, with confidence and knowledge playing a larger role than external approval.

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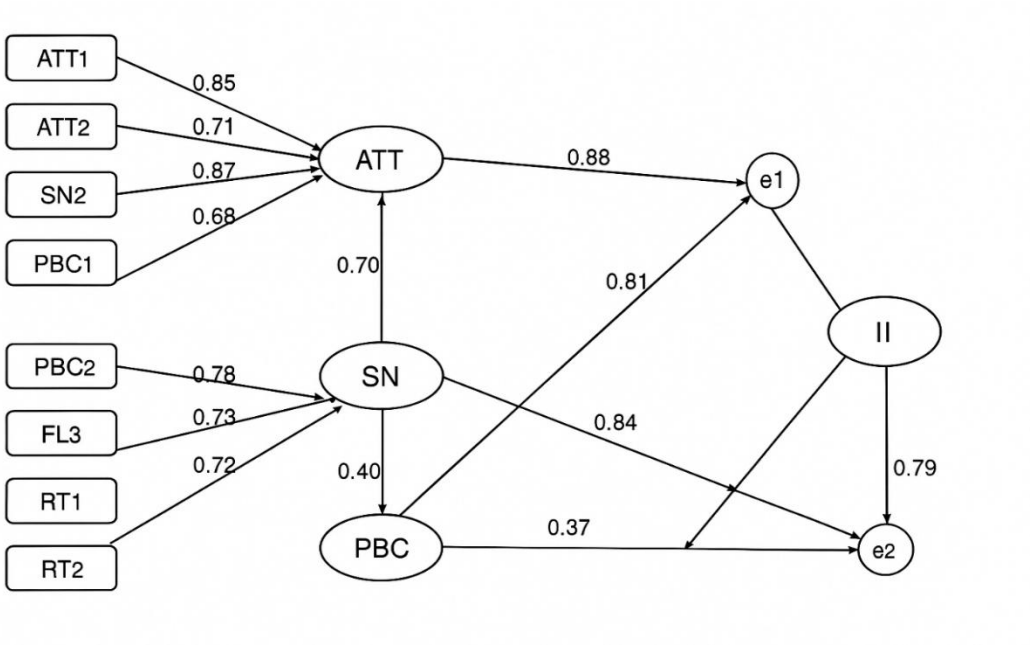
Figure 1. Path Diagram



Source: AMOS 28, SEM output

Table 4D. Standardized Path coefficients and p-values for each hypothesized relationship of the TPB Model

Path	Standardized β	p-value
Attitude → Intention	0.46	<0.001
Perceived Behavioral Control → Intention	0.41	<0.001
Subjective Norm → Intention	0.16	0.004
Financial Literacy (Mediator)	0.21	<0.001
Risk Tolerance → Intention	0.14	0.006

Source: Author's computation based on survey data (AMOS 28 output).

Note: The model explains 65% of the variance in Investment Intention (Adj. $R^2 = 0.65$).
This figure presents the SEM results for the Theory of Planned Behavior (TPB) model as applied to Gen Z investment intentions. Standardized path coefficients are displayed on the arrows between constructs. Model fit indices (χ^2/df, CFI, TLI, RMSEA, SRMR) confirm excellent model fit. Constructs include Attitude, Subjective Norm, Perceived Behavioural Control, Financial Literacy, Risk Tolerance, and Intention.

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7.4 EXPERIMENTAL INTERVENTION EFFECTS

To understand whether the interventions (Financial Literacy and Behavioural Bias training) significantly improved participants' investment intention scores from before to after the intervention, an intervention analyses were performed. The analysis helped to compare pre-intervention means and post intervention means for each group and whether the mean difference is statistically significant was established using a paired sample t-test. The two variables used in this analysis for each participant are scores for Investment Intention_Pre and Investment Intention_Post. Each Participant belongs to one of the three groups namely, Financial Literacy group; Behavioural Bias Training Group and Control Group.

Table 5. Results of the Intervention Analysis using Paired t-test

Group	Pre-Intention Mean (SD)	Post-Intention Mean (SD)	Mean Difference	p-value	Cohen's *d*
Financial Literacy (n=135)	3.1 (0.8)	4.2 (0.6)	1.1	< 0.001	1.55
Behavioral Bias Training (n=133)	3.0 (0.7)	3.9 (0.7)	0.9	< 0.001	1.29
Control (n=132)	3.2 (0.8)	3.3 (0.8)	0.1	0.15	0.13

Source: Author's computation based on primary survey data (SPSS 28 output; paired t-test analysis). Both intervention groups showed statistically significant increases in investment intention scores after the training ($p < 0.001$). The Financial Literacy intervention produced the largest gain ($\Delta M = 1.1$, Cohen's $d \approx 1.4$) which is then followed by Behavioural Bias Group ($\Delta M = 0.9$, $d \approx 1.2$). The control group showed no significant change. Thus, it is confirmed that the improvements were due to interventions.

7.5 INVESTOR SEGMENTATION (LCA)

To find out hidden sub-groups in the data probabilistic modelling has been used. The Latent Class Analysis which is model based clustering technique identified three latent classes. First, Risk Adaptive Pragmatists representing 45% of the sample are highly confident individuals and high financial literacy is considered as a dominant group. They exhibit strong perceived behavioural control. They can manage risk comfortably and are well informed relying on their own self-evaluation. They are ideal financially mature Gen Z investor. Second type of Gen Z investors are moderately literate and they are strongly influenced by peers and social media. They are Socially influenced learners representing 30% of the target group. These investors exhibit herd behaviour and are exposed to biases. 25% of the target group represents Cautious Novice. These are risk averse investors and have limited financial literacy. They are low in self-confidence and prefer low risk simple instruments to invest. They also avoid investing altogether due to fear of loss and lack of understanding. This approach empirically supports that Gen Z are heterogeneous.

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Table 6. Results from Latent Class Analysis

Latent Class	% of Sample	Core Traits
Risk-Adaptive Pragmatists	45%	High confidence, high financial literacy
Socially Influenced Learners	30%	Strong peer/digital influence, moderate risk
Cautious Novices	25%	Low control, risk averse, uncertain

Source: Primary survey data (SPSS 28, Latent Class Analysis output)

7.6 LONGITUDINAL (PANEL) EFFECTS

The longitudinal panel component tracked the same 400 Gen Z participants over a 12-month period (T_0: baseline, T_1: immediate post-intervention, T_2: 6-month follow-up, T_3: 12-month follow-up). Repeated Measures ANOVA and growth-curve estimation were used to analyze Investment Intention scores (5-point Likert scale). This is done to assess sustained behavioural impact. The analysis revealed that the effect of time on the measured outcome was different across the various groups being studied. The calculated $F(6,1176) = 32.47$ indicated that the observed differences are substantially greater than what would be expected by random chance. $P<0.001$ indicates that the result is statistically significant and there is extremely low probability that the observed interaction occurred by chance. $\eta^2=0.142$ indicates that the time-by-group interaction explains about 14.2% of the total variance in the outcome measure which is considered to be the large effect size. All this confirms that the intervention groups experienced sustained improvements over time relative to control. To reduce the chance of "false positive" post-hoc comparison involving Bonferroni correction method was used. This method indicated that both Financial Literacy and Bias-Awareness groups maintained significantly higher mean intentions at T_2 and T_3 compared to control ($p < 0.001$). The result also indicated that on average the positive changes in "intentions" that were created by interventions (compared to the control group) were largely sustained. The effect was still 94% after one year. However, p-value 0.028 indicates weakening or slight decrease in the effect over time. The average intentions declined by 0.25.

Table 7. Mean Investment Intention Scores Across Time Points

Group	Baseline (T_0)	Post-Intervention (T_1)	6-Month (T_2)	12-Month (T_3)	% Retention (T_3 vs. T_1)
Financial Literacy	3.10 (0.8)	4.20 (0.6)	4.05 (0.6)	3.95 (0.7)	94%
Bias-Awareness	3.00 (0.7)	3.90 (0.7)	3.75 (0.7)	3.65 (0.8)	94%
Control	3.20 (0.8)	3.30 (0.8)	3.25 (0.7)	3.20 (0.8)	97% (flat)

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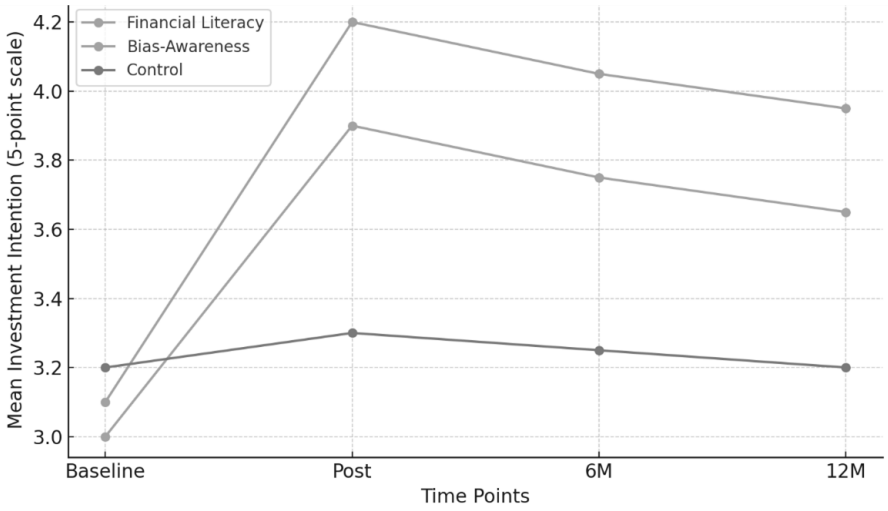
Source: Author's computation based on primary panel survey data using SPSS Statistics 28 (Repeated-Measures ANOVA and Descriptive Analysis; Longitudinal Dataset: September 2024 – August 2025).

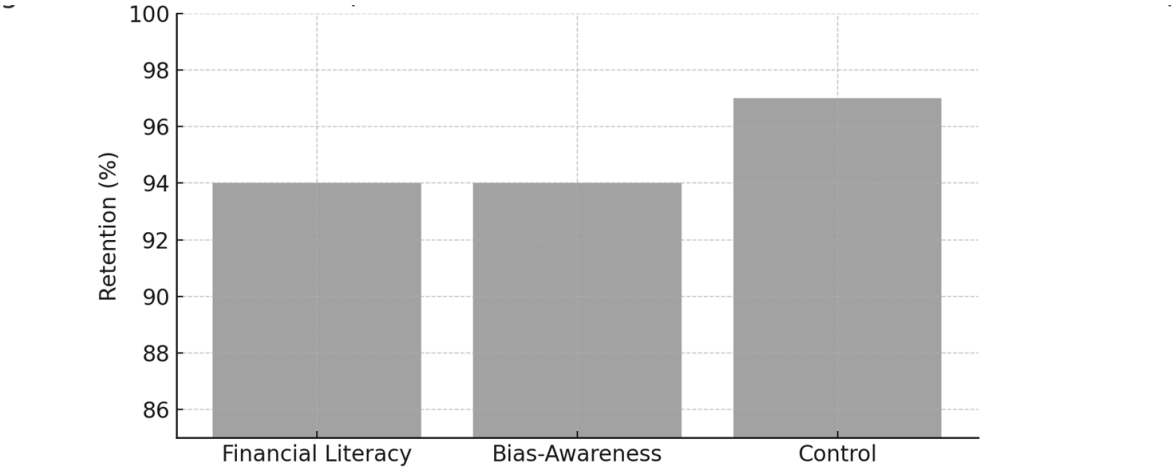
Figure 2. Longitudinal Trajectory of Investment Intention (T_0–T_3)



Source: Author's computation based on primary panel survey data (SPSS 28 output; repeated-measures ANOVA and descriptive analysis, longitudinal dataset: September 2024–August 2025).

The line chart shows steep immediate gains for both intervention groups, plateauing with slight decline by month 12. The control group remains nearly flat, underscoring the causal efficacy of educational treatments.

Figure 3. Retained Effect (% of Post-Intervention Mean Sustained After 12 Months)



Source: Author's computation based on primary panel survey data (SPSS 28 output; descriptive and retention analysis, 2024–2025.

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Table 8. Summary of Hypothesis Testing And Quantitative Insights

Hypothesis No.	Statement	Statistical Evidence / Test Used	Result	Interpretation
H_1	*Attitude has a significant positive effect on investment intention among Gen Z investors.*	SEM: $\beta = 0.46$, $p < 0.001$	Supported	Positive attitude significantly increases investment intention.
H_2	*Perceived Behavioural Control positively influences investment intention.*	SEM: $\beta = 0.41$, $p < 0.001$	Supported	Higher confidence and self-efficacy enhance investment intention.
H_3	*Subjective Norms significantly affect investment intention.*	SEM: $\beta = 0.16$, $p = 0.004$	Partially Supported	Peer and social influence matter but less than internal confidence and attitude.
H_4	*Financial Literacy mediates the relationship between Attitude, PBC, and Investment Intention.*	SEM (Mediation Analysis): $\beta = 0.21$, $p < 0.001$	Supported	Improved literacy strengthens the link between attitude, control, and intention.
H_5	*Risk Tolerance positively affects investment intention.*	SEM: $\beta = 0.14$, $p = 0.006$	Supported	Confidence in handling risk increases intention to invest.
H_6	*Behavioral interventions significantly improve investment intention compared to control.*	Paired t-test: $p < 0.001$ (Cohen's $d > 1.2$)	Supported	Financial Literacy and Bias-Awareness programs significantly raised intention scores.
H_7	*The positive effect of interventions is sustained over time.*	Repeated Measures ANOVA: $F(6,1176)=32.47$, $p<0.001$, $\eta^2=0.142$	Supported	94% of intervention effect retained after 12 months, with minor decline.
H_8	*Gen Z investors form distinct behavioral subgroups (latent classes).*	Latent Class Analysis (LCA)	Supported	Three distinct investor types identified: Pragmatists (45%), Learners (30%), Novices (25%).

Source: Author's own compilation from the primary survey

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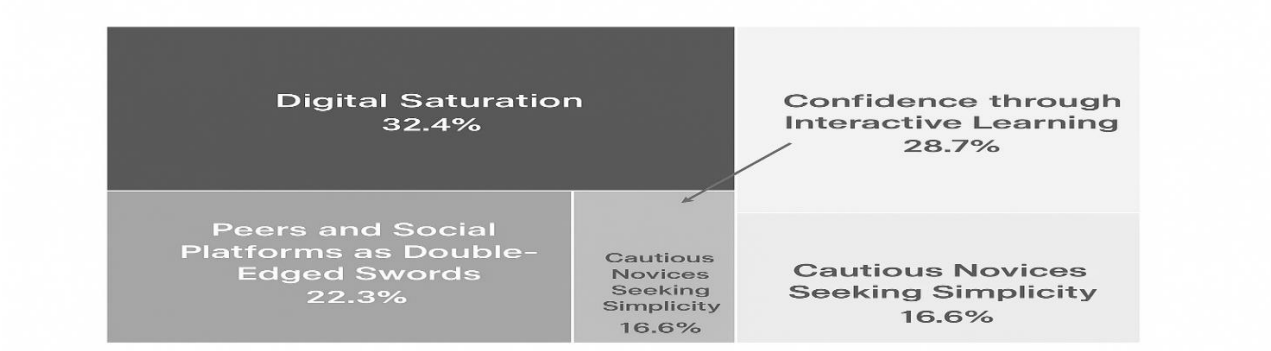
8. QUALITATIVE INSIGHTS

A qualitative study has been undertaken to supplement the findings of the quantitative study. Likewise, five focus group with each 6 to 8 participants were taken into consideration with a total 36 participants. Their transcripts were coded using NVivo 14 and analysed using a hybrid inductive-deductive approach which is aligned with the Theory of Planned Behaviour framework.

8.1 NVIVO CODING AND THEME DENSITY

142 initial codes were developed by NVivo 14 from the transcripts and these codes had been condensed into four major thematic clusters. The most dominant cluster are "Digital Saturation" and "Confidence through Interactive learning" while the 3rd and 4th cluster are "Peers and Social Platforms as double-edged swords" and "Cautious Novices seeking simplicity". Each time a phrase, sentence or paragraph is coded to a theme, NVivo recorded it as reference. The following figure (Figure 4) summarizes how much of the total coded content belongs to a theme. Percentages in the Figure 4 shows the relative dominance or importance of each theme i.e. how much discussions or textual attention it received compared to other themes.

Figure 4. NVivo Theme Density Map



Source. Author's NVivo 14 qualitative analyses (Focus Group Transcripts; Coded Node Frequency and Co-occurrence Visualization

8.2 THEMATIC CLUSTERS AND INTERPRETATIONS

Theme 1: Digital Saturation – Opportunity and Overwhelm (32.4%)
Participants consistently described social and digital platforms as both empowering and anxiety-inducing. They valued access to real-time investment information but reported decision fatigue due to conflicting advice.

Representative Quote:
"Sometimes I feel I don't know who to trust as I open Instagram or YouTube and everyone has a different opinion on which stock to buy"

Interpretive Insight:

This represents "Information overload bias" and it links directly to the "Subjective Norm" construct of TPB. The sentiment analysis via NVivo 14 described 61% of these references

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as "Mixed Valence" where the peers and influencers act as potential pressure sources. They influence without strengthening intention.

Theme 2: Peers and Social Platforms as Double-Edged Swords (22.3%)

Early exposure to investing created fear of missing out driven behaviours with the advent of social networks. NVivo's co-occurrence analysis revealed that "peer influence" nodes frequently co-occurred with "risk-taking" and "impulsivity" codes (correlation coefficient $r = 0.64$).

Representative Quote:

"I didn't want to miss out—even though I wasn't sure about it, when all my friends bought Bitcoins"

Interpretive Insight:

Subjective Norms reduce rational control inducing investment into a social identity. This finding correlates to the quantitative SEM finding where the subjective norms had a smaller yet a significant effect ($\beta = 0.16$, $p = 0.004$).

Theme 3: Confidence through Interactive Learning (28.7%)

Participants emphasized the importance of quizzes, mock trading and gamified applications teaching investment techniques as drivers of active learning. The word frequency cloud via NVivo's word frequency cloud (Figure 5) identified "practice," "confidence," and "app" as the top three lexical nodes associated with this theme.

Representative Quote:

"It felt like practice before the real game." After using a stock simulation app, I realized I could actually understand the basics"

Interpretive Insight:

Interactive learning enhances both confidence and self-efficacy which is the strong determinant of perceived behavioural control. Sentiment analysis of mean +0.74 indicates strong emotional reinforcement linked to interactive experiences.

Theme 4: Cautious Novices Seeking Simplicity and Relatability (16.6%)

Technical jargons created a discomforting environment for the first time investors. They preferred relatively easier and simple story-based education to learn about investment.

Representative Quote:

"If someone explained finance with examples from daily life, I'd feel more confident"

Interpretive Insight:

To encourage the cautious investors and to sustain them into long term investment engagement, simple narratives are required. The findings extend TPB by emphasizing the importance of communication clarity in shaping perceived behavioural control.

8.3 NVIVO CO-OCCURRENCE AND SENTIMENT VISUALIZATION

To identify interrelationships between qualitative themes, NVivo 14's Matrix Coding Query and Sentiment Analysis tools were used. Co-occurrence coefficients (Pearson's *r*) show how frequently two ideas appeared together in participants' statements. Sentiment analysis classifies the emotional tone of each reference as *positive*, *negative,* or *mixed.*

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Table 8A. Co-Occurrence Matrix of Key Nodes (NVivo 14 Output)

Node Pair	Co-Occurrence Coefficient (r)	Interpretation
Peer Influence × Risk-Taking	0.64	Strong relationship: peer pressure often linked with impulsive or FOMO-driven decisions.
Social Media Exposure × Decision Fatigue	0.59	High overlap: constant online content leads to confusion and analysis paralysis.
Confidence × Learning App	0.56	Positive association: interactive or gamified apps enhance investor confidence.
Digital Information × Anxiety	0.47	Moderate link: overexposure to financial content creates anxiety and hesitation.
Simplicity × Trust	0.44	Moderate link: clear, relatable explanations increase trust in financial education.

Source: Author's NVivo 14 analyses (Focus Group Transcript Corpus; Pearson Correlation Co-Occurrence Matrix).

Figure 5. NVivo Word Frequency Cloud – "Confidence through Learning" Theme

Source: Author's NVivo 14 qualitative analyses (Focus Group Transcripts; Word Frequency Query on the Confidence through Interactive Learning node).

A word cloud generated from coded references under "Confidence through Interactive Learning." The most frequent terms ("confidence," "practice," "game," "learn," "app") appear larger and bolder.

Table 8B. Sentiment Distribution across Major Themes

Theme	Positive (%)	Negative (%)	Mixed (%)	Mean Sentiment Score	Interpretation
Digital Saturation	22	17	**61**	+0.12	Mixed feelings: information access balanced by overload and confusion.
Peer & Social Platforms	34	29	**37**	+0.18	Generally ambivalent; peers inspire action but create pressure.

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Theme	Positive (%)	Negative (%)	Mixed (%)	Mean Sentiment Score	Interpretation
Confidence through Interactive Learning	**74**	10	16	**+0.74**	Strong positive emotion; interactive learning boosts self-belief.
Cautious Novices & Simplicity	58	21	21	+0.41	Positive tone; clarity and relatable examples reduce fear and increase comfort.

Source: Author's NVivo 14 sentiment analysis (Focus Group Transcripts; Node Classification and Sentiment Query).

Figure 6. NVivo Co-Occurrence Matrix (Peer Influence vs Risk-Taking Nodes)

Source: Author's NVivo 14 qualitative analyses (Focus Group Transcripts; Pearson Correlation Co-occurrence Matrix).

Note: Co-occurrence coefficients were generated through NVivo's matrix coding query. The strongest associations were observed between *Peer Influence* and *Risk-Taking* (r = 0.64), *social media* and *Decision Fatigue* (r = 0.59), and *Confidence* and *Learning App* (r = 0.56), indicating interlinked behavioural drivers in the TPB framework.

8.4 INTEGRATED INTERPRETATION

The qualitative results provide psychological depth to the quantitative findings. They demonstrate how Subjective Norms and Perceived Behavioral Control dynamically interact within Gen Z's digital financial environment:

- Digital and peer pressures both empower and overwhelm investors.
- Interactive and gamified education transforms self-doubt into confidence.
- Simplicity and relatability bridge cognitive and emotional gaps in financial literacy.

In sum, NVivo-based thematic analysis reveals that Gen Z's investment behaviour is not merely a cognitive process but a socially constructed, emotionally mediated phenomenon, extending TPB toward a Techno-Social Behavioural Finance model.

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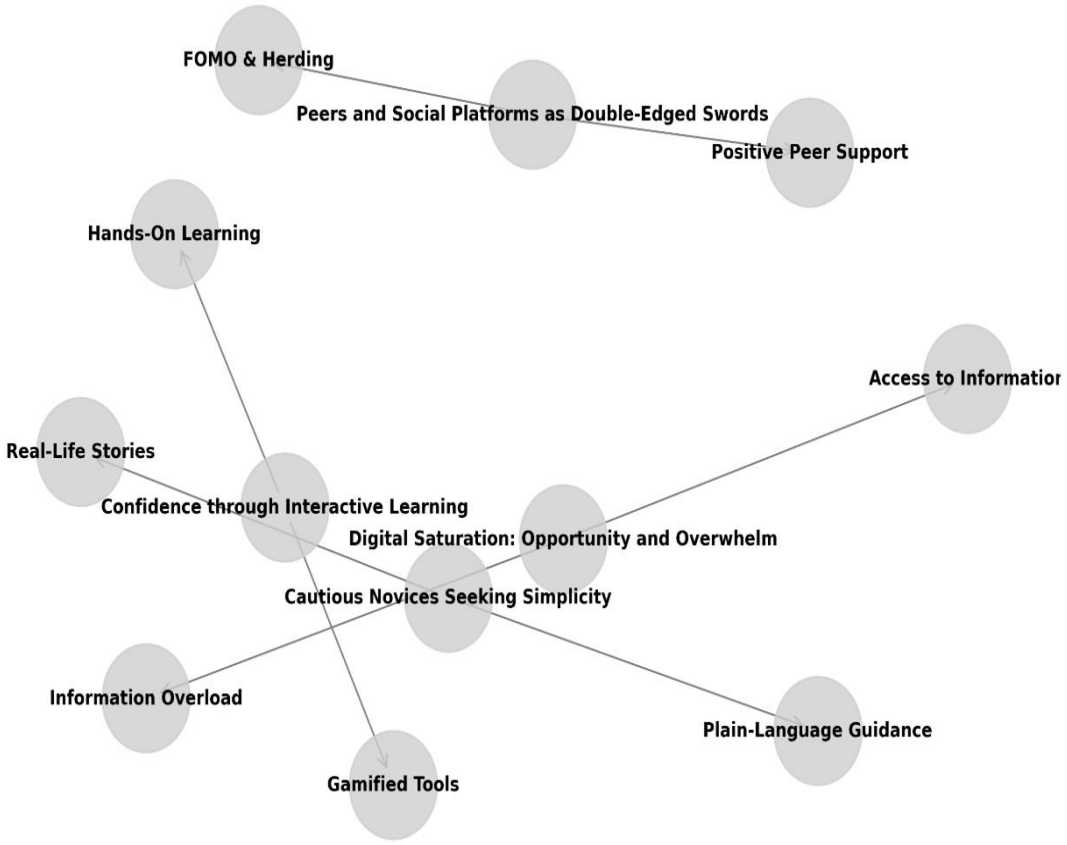
Figure 7. NVivo Thematic Map



Source: NVivo Thematic Map: Visual Thematic Hierarchy

9. CONCLUSION & RECOMMENDATIONS

This study paints a complex but human portrait of Gen Z: pragmatic, ambitious, and discerning, but sometimes anxious and easily influenced by social and digital tides. The real win comes when education and bias training are embedded in the digital channels Gen Z already trusts—boosting intent and confidence in ways that last. Our results support—and push the boundaries of—the TPB framework, demonstrating that well-timed interventions really can move the needle. Gen Z is not a stereotype but a collection of motivated individuals, each on their own financial journey. By placing digital-first, evidence-based interventions in their path, we can nurture more confident, capable young investors. Education, for this group, is not just about first steps—it's about sustained, engaging support. Post analysis and findings the following recommendations can be given

- Gamify and personalize financial learning—meet Gen Z where they are.
- Leverage social media responsibly—positive peer norms can be powerful.

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- Sustain the momentum: One-off interventions work, but periodic "booster" sessions or app reminders help effects last.
- Highlight risk mastery, not just rewards: Help Gen Z practice managing risk in safe environments.
- Targeted support: Develop micro-courses for different investor types—cautious, bold, or social-minded.

DECLARATIONS

- **Funding:**

  We declare that no funding has been received for this research.

- **Conflict of Interest:**

  No, we declare that the authors have no competing interests as defined by Springer, or other interests that might be perceived to influence the results and/or discussion reported in this paper.

- **Author Contributions Statement:**

  Main contribution, analysis and conclusions drawn from the study are written by the First and Corresponding author of the study. The second author looked into overall planning, design and layout.

- **Ethics declaration:**

  Participants gave consent via the statement, "I am aware that my responses are confidential, and I agree to participate in this survey".

- **Note on Software:** All quantitative analyses—including descriptive statistics, reliability, ANOVA, SEM, LCA, t-tests, and data visualizations—were conducted using IBM SPSS Statistics (Version 28) and AMOS (Version 28). Focus group transcripts were coded and analyzed with NVivo.
- **Declaration of generative AI and AI-assisted technologies in the manuscript preparation process**

  During the preparation of this work, the first author Mr. Ayan Banerjee used ***"Research Rabbit"*** and ***"Semantic Scholar"*** to find and read suitable literatures for the study. In semantic scholar requisite keywords and filters were provided to fetch literature thematically. Research Rabbit enabled the author(s) to track similar literary works related to the study. The use of these AI-assisted technologies helped the researchers to make the conceptual framework of the study concrete and established the research gap. After using these tools, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the published article.

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ECONOMICS AS A LENS TO VIEW THE WORLD: STUDENT INSIGHTS FROM SECONDARY EDUCATION

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ABSTRACT

This paper investigates the perceptions and understanding of students from classes IX to XII regarding economics as a field of study and its relevance in addressing contemporary global challenges. Through a mixed-method survey-based approach, the study investigates how young learners perceive the role of economics in solving real-world problems such as inflation, unemployment, inequality, climate change, and resource management. The analysis reveals the extent of students' awareness of the practical applications of economic principles and their understanding of how economics influences decision-making at both national and global levels. Findings also reveals on how the subject is introduced and taught in schools and whether it encourages critical and solution-oriented thinking. The study concludes that strengthening economics education at the secondary level is essential to equip future generations with the skills to comprehend and address complex societal issues through informed and responsible economic reasoning.

KEYWORDS: ***economics education, student perception, secondary education, interdisciplinary learning, policy relevance***

1. INTRODUCTION

"Little else is requisite to carry a state to the highest degree of opulence from the lowest barbarism but peace, easy taxes, and a tolerable administration of justice."
— Adam Smith

Economics is a discipline that provides a systematic way of understanding how individuals and societies make choices under conditions of scarcity. It connects abstract theory with real-life decisions, helping us interpret human behavior, market dynamics, and the policies that shape the functioning of nations. In the present era, characterized by uncertainty and rapid change, economics has become not only a subject of academic inquiry but also a vital tool for interpreting global events, from inflationary trends to environmental challenges.

Studying economics enables learners to think strategically and analytically about everyday decisions, from managing personal finances to evaluating public policies. The demand for individuals trained in economics and finance continues to grow, as such knowledge proves essential in sectors like banking, business, and governance. Thus, exploring how school students perceive economics as a discipline

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offers insight into how future citizens and professionals conceptualize their role in an interconnected economic world.

"*The inscrutability [of economics] is perhaps not unintentional. It gives endless employment to dialecticians who otherwise might become public charges or, at very worst, swindlers and tricksters." — Jack Vance*

The present study focuses on understanding how students at the secondary and higher secondary levels interpret economics as a subject and how they perceive its role in solving contemporary global and societal problems. By investigating learners' views, this research aims to highlight the strengths and gaps in how economics is taught and understood at this formative stage of education.

2. BACKGROUND OF THE STUDY

Economics has gained exceptional significance in the modern world due to the growing complexity of social, political, and environmental issues. With persistent challenges such as income inequality, climate change, and resource scarcity, the ability to apply economic reasoning has become an essential life skill. While economics is often associated with higher education, the foundation for economic literacy is laid much earlier, i.e. typically during the secondary and senior secondary stages.

Students in classes IX to XII are at a developmental juncture where they begin to form academic interests and career aspirations. Their engagement with economics during this phase can shape how they understand real-world issues and approach problem-solving. However, limited research exists on how students at this level in India perceive economics and its relevance beyond the classroom. This study, therefore, seeks to bridge that gap by analyzing students' insights into how economics relates to everyday life and its perceived usefulness in addressing global problems.

3. LITERATURE REVIEW

Economics as a discipline has evolved beyond its traditional boundaries of production, consumption, and distribution to encompass behavioral insights, sustainability, and public policy. Understanding how learners perceive economics today requires grounding in both educational and disciplinary perspectives. Li and Maskin (2021) introduced the concept of *government and economics* as an emerging area that bridges governance and market dynamics, emphasizing that a deeper public understanding of such interactions is essential for informed citizenship. Their work suggests that economic literacy is no longer confined to specialists — it is a civic necessity. Modig (2021), examining Swedish scholars' views on what constitutes "powerful economic knowledge," found that economics education must help learners connect abstract concepts to their lived experiences. He argued that effective teaching involves contextualizing theories like supply-demand or market equilibrium within real societal challenges such as inequality and climate change. Similarly, Mueller-Langer et al. (2019) investigated replication practices in economics research, noting a lack of methodological transparency. This finding indirectly points to the need for economics education that encourages critical thinking and questioning like qualities that must be cultivated from the school level. Anthony, Smith, and Miller (2015) emphasized that the economic literacy of teachers plays a decisive role in shaping students' understanding. They argued that if preservice teachers lack conceptual clarity, the quality of economics instruction at the school level suffers, creating a generational gap in economic reasoning. O'Donnell (2009) proposed the *threshold concept hypothesis*, suggesting that certain key ideas in economics (like opportunity cost

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or elasticity) act as conceptual gateways. Unless these thresholds are understood, learners struggle to progress to higher-level economic reasoning.

Collectively, these studies underline that economics education must go beyond rote learning. Early exposure, relevant pedagogy, and interdisciplinary linkage are critical in nurturing economically literate, socially aware individuals. However, few studies have focused on how *school-level learners* themselves perceive economics, a gap that this paper seeks to address.

4. OBJECTIVE OF THE STUDY

The study has two main objectives which are as follows:

a. To examine how secondary school learners, perceive economics as a subject for understanding and solving real-world problems.
b. To explore students' awareness of the interdisciplinary and practical dimensions of economics in addressing societal challenges.

5. RESEARCH QUESTION OF THE STUDY

The study aims to answer the following research question: How do learners at the secondary and higher secondary levels perceive the role of economics in solving existing problems and making informed decisions?

6. METHODOLOGY OF THE STUDY

This study adopted a mixed research methodology with descriptive survey method, combining both quantitative and qualitative approaches to gain a comprehensive understanding of how students from classes 9 to 12 perceive Economics as a subject and its relevance in solving current global issues.

Research Design: Quantitative data was collected through structured questionnaires administered to a diverse sample of students across various schools. These surveys included multiple-choice questions with Likert'sscale questions to measure students' awareness, interest, and understanding of economic concepts and their applications.

Research Tool: Data collection tool for this study was by questionnaire as circulated to learners designed by the researchers in consultation with subject experts. Following a thorough review of existing literature, a set of 20 questions based upon likert'sfive point scale.

Participants: Convenience sampling of 50 students from South Kolkata schools was selected due to accessibility and representation of ISC-affiliated institutions

Data Collection and Data Analysis: The data collected has been analyzed using statistical methodologies to arrive at the conclusion. The data gathered was based on a formal close ended questionnaire framed according to Likert's five-point scale (Strong Agree, Agree, Undecided, Disagree, Strongly Disagree). Data were analyzed using descriptive statistics such as mean, percentage, and frequency distribution. Participation was voluntary with informed consent from all respondents.

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7. FINDINGS

The survey results provide rich insights into how young learners conceptualize economics. Responses indicate that students regard economics as deeply relevant to contemporary life and intertwined with multiple disciplines. A vast majority (100%) agreed or strongly agreed that economics remains crucial for understanding present-day realities such as inflation, unemployment, and decision-making. This overwhelming consensus underscores that even at a young age, students perceive economics as more than a theoretical subject — they see it as a *tool for understanding the world*. The interdisciplinary perception was also strong: 98% linked economics with subjects like mathematics, psychology, and political science. This suggests that students appreciate the cross-cutting nature of economics and its ability to explain human behaviour and societal outcomes. While most respondents saw economics as *practical* (56% strongly agreed) and policy-relevant (76% strongly agreed), conceptual ambiguity surfaced in areas like environmental economics (40% neutral) and classical theory relevance (44% neutral). This neutrality points to areas where school curricula could be made more explicit and integrative. Furthermore, nearly three-fourths (72%) of students were uncertain about whether economics effectively teaches resource efficiency. This finding indicates a gap between classroom instruction and sustainability-oriented applications of economics — a critical aspect in today's context of climate change and global resource crises.

Table 1. Summary of Key Student Responses

Statement	Strongly Agree / Agree (%)	Neutral (%)	Disagree / Strongly Disagree (%)
Economics is relevant in today's world	100	0	0
Economics is interdisciplinary	98	2	0
Economics relates to daily life and consumption	58	36	6
Economics includes political dimensions	42	40	18
Modern Economics depends on Classical ideas	56	44	0
Economics studies human psychology	48	38	14
Economics begins with scarcity and seeks solutions	56	30	14

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Economics promotes efficient resource use	28	72	0
New branches like Financial Economics should be added	54	40	6
Economics is more practical than theoretical	56	34	10
Economics aids in policy-making	76	24	0
Inflation reflects the economic situation	80	20	0
Unemployment is a major focus	54	46	0
Economics helps solve basic societal problems	72	28	0

Table 2. Thematic Summary of Student Perceptions

Theme	**Dominant Response**	**Interpretation**
Relevance of Economics	100% Agreement	Students universally view economics as essential for understanding modern life.
Interdisciplinary Connections	98% Agreement	Learners see economics linked to politics, psychology, and mathematics.
Practical vs. Theoretical Balance	56% Strongly Agree	Students value practical applications, suggesting experiential learning appeal.
Policy Role of Economics	76% Strongly Agree	Indicates awareness of economics' influence on governance and public welfare.
Environmental and Resource Issues	72% Neutral/Uncertain	Curriculum appears to underemphasize ecological and sustainability aspects.
Conceptual Depth (Classical vs. Modern)	44% Neutral	Suggests need for clearer teaching of theoretical evolution in economics.

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8. DISCUSSION

The results demonstrate a vibrant curiosity among secondary school students toward economics and its relevance in their lives. The nearly unanimous agreement on the subject's importance reflects a generational shift i.e learners are increasingly aware of economic issues shaping their everyday experiences, from rising prices to job prospects. This finding aligns with Modig's (2021) emphasis on contextual economic knowledge: students tend to appreciate economics more when it connects to real-life situations. In this sense, the Indian secondary education system shows promise — students already associate economics with practical understanding and societal problem-solving. The perception of economics as interdisciplinary (98%) echoes the global trend toward integrated education frameworks. Learners naturally see overlaps between economics, psychology, and politics, which aligns with Li and Maskin's (2021) argument that economic reasoning must include governmental and behavioral insights. However, neutrality in responses about *classical theory relevance* and *environmental applications* indicates conceptual fragmentation. Students recognize the "what" and "why" of economics but remain uncertain about its deeper theoretical "how." This aligns with O'Donnell's (2009) notion of "threshold concepts" — key ideas that students must internalize before higher-level comprehension can occur. The gap suggests that school economics teaching may focus too heavily on surface-level definitions rather than analytical reasoning. The uncertain responses on *resource efficiency* and *sustainability* also highlight an emerging need to integrate environmental economics into school curricula. In an era of climate crisis and green transitions, understanding resource allocation and sustainable consumption should not be delayed until higher education. On a positive note, the overwhelming recognition of economics as *policy-relevant* (76%) and *practically useful* (56%) signals strong intrinsic motivation among learners. It reveals that students are not merely memorizing terms but actively relating economics to governance, inflation, and social justice. This is a promising sign that with the right pedagogical interventions which includes project-based learning, simulations, and real-world data use which economic education can nurture informed, critically thinking citizens. In summary, while the study finds that economics is perceived as *relevant, interdisciplinary, and policy-oriented*, it also exposes blind spots in theoretical depth, sustainability integration, and conceptual clarity. Addressing these through curriculum design and teacher training could transform economics from a textbook subject into a genuine lens for viewing and improving the world.

Based on the study we can make the following important policy relevant suggestion which includes the following:

a. **Curriculum Enrichment:** It is important to introduce applied fields like Financial and Environmental Economics at the secondary level.

b. **Pedagogical Reform:** Encourage students to model-building, simulation, and real-life case analysis to enhance conceptual understanding.

c. **Skill Integration:** It is important to blend economics education with technology, data interpretation, and mathematics for holistic learning.

d. **Practical Application:** Assign projects that connect classroom learning to real-world economic issues (inflation, inequality, sustainability).

e. **Teacher Training:** Strengthen teacher literacy and pedagogical flexibility to nurture analytical thinking among students.

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9. CONCLUSION

Secondary school learners demonstrate remarkable awareness of economics as an essential tool for understanding and improving the world. They view it as a practical, policy-relevant, and interdisciplinary subject. However, conceptual depth in areas such as classical theory, sustainability, and efficiency remains limited. Strengthening the school-level economics curriculum with a focus on contemporary applications and interdisciplinary links will help shape more informed and responsible global citizens who can use economic reasoning to address tomorrow's challenges.

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CONSUMERS ADAPTIVE DYNAMICS OF ONLINE SHOPPING IN INDIA: A CASE STUDY

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ABSTRACT

Internet based marketing, known as online marketing, has brought incredible changes in the lifestyle and livelihood patterns of people around the world. This online marketing becomes is very helpful and time effective for those who has little time to shop during their busy professional schedules. India, though not yet at par with the global online markets but it endows with vast market has the potential to develop a vibrant online market. Therefore, it becomes imperative to study Indian consumer's adaptive dynamics of online shopping. This is a case study on Blinkit and is based on primary data collected through circulating a preordained questionnaire. The study reveals that online shopping is gaining popularity among young generation and identified that 'easy to use app' fast delivery' are the two prime factors significantly affect customers' selection of online shopping platform. Discount and offers as well as easy payment are also become important issues for the online shoppers. Therefore, online retailing should focus on trust worthy relationship between producers and customers.

KEYWORDS. ***Online shopping; E-commerce; Q-commerce; Internet technology; Blinkit***

1. INTRODUCTION

The advent of internet had brought a revolution in each and every spheres of human life and at present it becomes a part and parcel of everyday activities. Through internet millions of people are communicating with one another, performing research, make financial transactions; find entertainment, booking cab for travel and at present buying and selling products and services. Thus internet makes remarkable changes in the life and livelihoods of every individual. E-retail has been a disruptive force in global retail. The Covid-19 pandemic has been an inflection point for e-retail adoption globally. In India, online shopping was started early in 1995 and became popular during the internet boom in 1999-2000 with the well-known auction sight known as bazee.com. In fact, customers are now shopping online using a range of different computer devices like laptop, tablet, smart-phone etc.

Online shopping is one of the most popular activities that take place on internet. It has been observed that the number of internet users and online buyers have been growing exponentially hand-in-hand both globally and in India. It should be noted that Michal John Aldrich, a British innovator and entrepreneur, introduced online shopping in 1979 through videotext (a two-way message service) to enable online transaction processing between consumers and businesses and between one business to another. Later, this technique is known as e-commerce. Indian's annual transacting e-retail shopper base is estimated to scale to 230-250 million people in 2023.The expected Compound Annual Growth Rate (CAGR) in

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the number of online shopper in India is estimated to be 22% for in rural areas and 15% for urban areas between 2019 and 2026. In India, the diverse consumer micro-segments have been more silent. Now, 7 out of 10 online shoppers reside in Tier 2+ cities and one-third of online shoppers are part of Gen Z (i. e. born in or after 1997). Again, about one-third of online shoppers come from low-income or low-middle- income cohorts. Overall, online spending is only 5-6 % of total retail in India as compared to 23-24% in US and 35+% in China. According to Economic Times, dated 28th July 2025, only 20-25% of India's internet users shop online, showing an untapped potential. It has been estimated by Internet and Mobile Association of India that the average annual growth of this market is around 70%. Therefore, there is a huge scope and opportunity for e-retailing in India and that is the rational of doing this study.

However, online merchandizing environment has become significantly competitive aiming for profoundly understanding consumer's persona that fascinates them to shop online. This study is constructed to comprehend this through studying customers' online buying from Blinkit (one of the well-known online retailers in India). This study tries to identify certain influencing aspects, i.e. factors, affect customer's interest to purchase online. The story of Blinkit, a well-known e-commerce platform in India, is akin to the story of the development of India's online retail market. Therefore, it becomes essential to know the historical journey of Blinkit.

Blinkit, earlier known as Grofers was established in December, 2013 by Albinder Dhindsa in collaboration with Saurabh Kumar who had previously collaborated at Cambridge Systematics. At the startup stage the aim of the company was to tackle inefficiencies in the grocery delivery market for both customers and merchant as well as bring order to a fragmented industry and initially it was solely confined in Delhi NCR. After seven years of functioning as a provider of online grocery supply, the company launched into express grocery delivery within India via building of dark stores in all the cities in India. In July 2021, the company formally reported that it delivered 7000 groceries in Gurgaon in 15 minutes and subsequently it launched 10-minutes delivery inside the top-12 cities. After formally achieving multiple 20,000 below 15-minutes delivery per day in 10 cities, on December 2021, Grofers changed its brand name to Blinkit in keeping with its overall vision to embrace quick-commerce. In 2022, Zomato, a leading platform for food delivery, bought Blinkit and this acquisition for $568 million was marking a key shift. In fact, this acquisition truly marked a complete alignment between both the chief players in the on-demand delivery ecosystem. Zomato's meaningful financial backing and technical expertise enable Blinkit to readily scale its quick-commerce model further, strengthening its position as a true innovator in ultra-fast grocery delivery.

In 2021, switch from Grofers to Blinkit was more than just a rebranding; it represented a dedication to speed and innovation. This modification strengthened the business commitment to effectiveness and innovative solutions. The change is clearly reflected in the brand's new logo and tagline, "Blink and its Delivery," which highlight the company's focus on adaptability, dependability and exceptional customer pleasure.

The present study is an endeavour to unveil consumers' adaptive dynamics of online shopping through a case study on Blinkit.

2. LITERATURE REVIEW

Over the last two and a half decades' significant changes have been observed in the internet technology and that abruptly changing the business format from traditionally retail to a new form, popularly known as internet shopping or online shopping. There are certain convenient and attractive characteristics to

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shop online as compared to traditional way of shopping, such as facility to view and purchase products at any time, visualize their needs with products, compare between different brands of products, discuss products with other consumers, option to pay on delivery etc. Researchers have conducted several studies on various aspects of online shopping. Dahiya and Gayatri (2018) argued that consumer online shopping behavior is shaped by multiple factors, such as sensitivity to pricing, product variety, smooth transaction process and trust in digital payment methods. Lim et.al (2016) observed that personalized communications have a major role in influencing consumer purchasing decisions. In addition, Gefen *et.al* (2003) find out psychological aspects, such as website usability, perceived risk and trust that greatly affect consumer preferences.

Hiser *et al.,* (1999) observed that for grocery shopping, there is no relationship between customers online shopping and their income, family size and gender. However, age and education appear as important determining factors for adopting online grocery shopping. On the other hand, Weber *et al.,* (2016) observed that time-saving aspect plays a major role for the customers to opt for online grocery transactions. For opting into online grocery shopping instead of traditional retail stores, user friendly sites and options played a vital role (Sathiyaraj *et.al*, 2015).

Baheti and Kaushal (2015) are of the opinion that customers' online food purchase in India depends on several factors such as customer's perceived cost, convenience and enjoyment as well as perceived danger for contamination. With other things, product quality is the major concern of the online shoppers (Kaur, 2016). Verma *et al.,* (2016) are of the opinion that with the growing youth population, online shopping will increase significantly in size in the near future. Kothari *et al.,* (2016) observed that consumers have sufficient knowledge of multiple brands available in the market but they lack willingness to shift from one brand to another. Bhatia and Gupta (2022) observed that the major forces for fueling online shopping are raising urban development, increase of web usage and the millennial client's craving for ease. In addition, the Covid-19 pandemic also plays a key part in speeding up the spread of online shopping for grocery, personal care items and household staples that in turn enhance the demand for faster delivery services. Gaur and Saini (2021) also observed a rise in the quick commerce which is driven by the consumer's growing preference for instant gratification. The study showed how the 'need for immediacy' is now a key trait of city shoppers and that helps Zepto, Swiggy Instmart, Blinkit etc. to get platforms to grow. This study suggests that the success of quick commerce is closely tied to company's ability to ease certain small, frequent purchases with added emphasis on speed as well as convenience delivery.

Singh *et al.,* (2022) had made a comparative study on consumers' q-commerce adoption between rich and poor countries. In their study they stressed in the importance of prices and firms offering frequent discounts and promotional offers which affected on customers' acquisition and retention. Their study reveals that rivalry spurred through sharp price lessening and rivalry further make schemes for attracting backers, but ultimately fade out. The study also argued that market consolidation is quite probable, since bigger firms might buy smaller rivals in order to strengthen their position. However, Rao and Reddy (2023) examine how merger let firms exploit many scale economies, raise total operating output along with lower consumer expenses. By citing Zomato's acquisition of Blinkit as a key example, they have made a comprehensive discussion on the effect of consolidation within the quick commerce sector. In this regard, the authors cautioned that such mergers and acquisitions might trigger formal scrutiny and these actions can stir unjust commerce conduct. In this regard Saxena and Kumar (2022) argued that Blinkit faced important challenges despite rising popularity, such as higher running costs, issues concerning connecting supply chain management and intense competition with platforms like Zepto,

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Swiggy Instamart and Big-Basket. Patel and Ramesh (2023) are of the opinion that employing AI-based suggestions, a deeper emphasis on environment and complete growth into tier-2 and tier-3 cities will be major impetuses for the rise of rapid e-commerce platforms.

Sharma *et al.,* (2021) studied sustainability issues related to quick commerce, especially with regard to the ecological effects of prompt shipment. On the other, Mckinsey & Company (2022) explores the challenges faced by the q-commerce companies in terms of labour practices and worker welfare and highlighted working conditions of delivery personnel, particularly performance workers, who often face low pay for long hours of work. The company suggests that the growth of q-commerce will be ultimately shaped by regulatory changes and labour reforms and that would significantly impact on industry's cost structure.

ET Retail (2022) observed that quick-commerce becomes a fast-growing sector within the more wide-ranging e-commerce sector. Podukhe *et al.,* (2022) highlighted three key elements of instant delivery model: technology, dark stores and delivery partners. However, Huang *et al.,* (2022) made a clear distinction between e-commerce and quick-commerce by looking at various factors such as delivery time, methods target customers groups consumer preferences and operational setups. E-commerce delivery time, in general, stretch from a day to a week and quick commerce is aiming to deliver orders within an hour. E-commerce often uses delivery trucks, while quick commerce leans heavily on two-wheelers for quick transport. When it comes to target customers, e-commerce usually appeals to families with three or more members, whereas quick commerce is more focused on individuals living alone. Again, e-commerce shoppers tend to be more price-conscious and attracted by discounts, while quick commerce shoppers are all about getting their orders fast. The logistics also show differs significantly, e.g. e-commerce retails on large, centralized warehouses, while quick commerce operates through small, strategically located dark stores in busy areas to ensure quick order processing and efficient delivery.

3. OBJECTIVES OF THE STUDY

- To analyze consumer preferences towards online shopping with respect to age and gender, with a focus on Blinkit.
- To examine the frequency, purpose, and factors influencing consumer usage of Blinkit for online shopping.
- To evaluate consumer satisfaction with Blinkit's services, including delivery speed, product availability, pricing and overall shopping experience.

4. RESEARCH METHODOLOGY

This research is based on a case study on Blinkit, a well-known and vibrant online grocery retailer in India. The study is based on primary data and the data have been collected through canvassing a pre-ordained questionnaire to the customers of Blinkit residing in the district of Kolkata and Howrah. The questionnaire was made, using self-administered software called Google Form and its circulation was done through social media and online community forum. Convenience sampling method was used in the selection of sample respondents. To understand gender differential online shopping behaviour, reason behind choosing Blinkit, level of satisfaction and feedback and payment preferences etc. both quantitative and qualitative questions along with some open-ended questions were put forward to the

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respondents to respond. The respondents of this study are from different professions and are from different age-groups. After discarding incomplete responses, the sample size of this study becomes 149. For the sake of simplicity, simple statistical techniques like frequency distribution and percentage distribution are used for data analysis and the data are presented in simple statistical tables.

5. DATA ANALYSIS AND DISCUSSION

At the outset it would be useful to know some basic characteristics of 149 sample respondents whose responses are analyzed in this study. Out of 149 respondents 61(41%) are males and 88 (59%) are females and are distributed over different age-groups (below 18, 18-25, 26-35, 36-50 and above 50 years) and different professions (student, working professional, business owner and home maker). Among the respondents 83 (56%) (23% male and 33% female) are in the 18-25 age group and 106 (71%) (29% male and 42% female) are students. It is to be noted here that the analysis of this study would be biased by the presence of 71 % student respondents and would reflect student's perception on online shopping. Respondent's characteristics are provided in the following Descriptive Statistics.

Table 1. Descriptive Statistics

Age Group	Male					Female				
	Student	Working professional	Business Owner	Home maker	Total	Student	Working professional	Business Owner	Home maker	Total
Below 18	11	0	0	0	11	19	0	0	0	19
18-25	32	0	2	0	34	43	5	1	0	49
26-35	0	4	3	0	7	1	4	0	1	6
36-50	0	3	4	0	7	0	8	3	2	13
Above 50	0	1	0	1	2	0	0	0	1	1
Total	43	8	9	1	61	63	17	4	4	88

Source: Primary Survey, 2025

The frequency of the usage of Blinkit online retail shopping platform is found (as expected) highest in the 18-25 years age group of respondents for both male and female. But the interesting point is that most of respondents (63%) are in the age group of 18-25, irrespective of their professions, either shop online daily or weekly from Blinkit. It is apparent that 96 (i.e. 64%) sample respondents (40, i.e. 27% males and 56 i.e. 37% females) are used to shop online daily (15%) or weekly (49%) from the Blinkit online platform. This indicates that females shop online more frequent as compared to male (see table-1).

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Table 2. Respondents Frequency of Blinkit Usage by Age and Gander

Age Group	Blinkit Usage Pattern									
	Male					Female				
	Daily	Weekly	Monthly	Rarely	Never	Daily	Weekly	Monthly	Rarely	Never
Below 18	2	6	2	1	0	3	10	4	2	0
18-25	7	18	9	0	0	5	29	10	5	0
26-35	2	3	0	2	0	3	1	1	1	0
36-50	0	1	4	2	0	1	4	5	3	0
Above 50	0	1	0	1	0	0	0	1	0	0
Total	11	29	15	6	0	12	44	21	11	0

Source: *Primary Survey, 2025*

Table 3. Type of Products Respondents Mostly Purchase from Blinkit by Age and Gender

Age Group	Type of Products mostly Purchase from Blinkit							
	Male				Female			
	Groceries	Snacks & Beverages	Personal Care Products	Household Essentials	Groceries	Snacks & Beverages	Personal Care Products	Household Essentials
Below 18	8	10	2	5	13	8	7	5
18-25	23	31	9	16	36	45	20	21
26-35	5	6	0	3	4	3	3	3
36-50	3	4	2	3	11	8	4	4
Above 50	1	0	1	0	1	0	0	1
Total	40 (27%)	51 (34%)	14 (9%)	27 (18%)	65 (43%)	64 (43%)	34 (23%)	34 (23%)

Source: *Primary Survey, 2025; Figures in the parenthesis indicate percentage of total respondents*

It is evident, while looking into the type of products the sample respondents mostly purchase from Blinkit, that overall 70% (male 27% and female 43%) sample respondents shop Groceries. On the other, 77% (male 34% and female 43%) shop Snacks & Beverages, 32% (male 9% and female 23%) shop Personal Care Products and 41% (male 18% and female 23%) shop online Household Essentials from Blinkit. It is evident that, irrespective of gender, the respondents in the age group of 18-25 used to purchase the above mentioned products more than other age groups from Blinkit. Overall the number of female respondents is found significantly more in number buying products from Blinkit as compared to their male counterpart.

Now an obvious question arises that why the sample respondents choose to buy products from Blinkit. It is observed that more than 91 % (male 35% and female 56%) respondents choose Blinkit for its fast delivery. This means 'fast delivery' is the prime concern for the customers while choosing an online retailer. It is also observed that about 40% (male 17% and female 23%) revealed that 'Easy to use App' is their next consideration for buying from Blinkit. It is interesting to observe that 24% (male 8% and female 17%), i.e. about one-fourth of sample respondents considered 'Discount and Offers' as an important factor for choosing an online platform. However, about 26% (male 9% and female 17%) considered 'Product variety' as an important factor for selecting an online platform. 'Customer Service' does not appear here as an important factor compared to other factors.

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Table 4. Reasons behind choosing Blinkit for online shopping by Age and Gender

Age Group	Reason for Choosing Blinkit									
	Male					Female				
	Fast Delivery	Discount & Offers	Product Varity	Easy-to-use App	Customer Services	Fast Delivery	Discount & Offers	Product Varity	Easy-to-use App	Customer Services
Below 18	9	3	5	7	1	16	3	7	6	2
18-25	30	2	7	12	5	49	18	14	20	7
26-35	7	0	0	2	2	5	1	1	3	1
36-50	6	3	1	4	1	13	4	3	5	2
Above 50	1	0	0	0	1	0	0	1	0	0
Total	53 (35%)	8 (5%)	13 (9%)	25 (17 %)	10 (7%)	83 (56%)	26 (17%)	26 (17%)	34 (23%)	12 (8%)

Source: *Primary Survey, 2025; Figures in the parenthesis indicate percentage of total respondents*

Table 5. Respondents' Opinion on Affordability of Blinkit Products by Age and Gender

Age Group	Customers opinion on affordability of Blinkit Products									
	Male					Female				
	Very Affordable	Affordable	Indifferent	Expensive	Very Expensive	Very Affordable	Affordable	Indifferent	Expensive	Very Expensive
Below 18	1	6	4	0	0	1	10	8	0	0
18-25	4	18	12	0	0	6	22	19	2	0
26-35	1	3	2	1	0	1	1	2	2	0
36-50	1	0	5	1	0	2	5	5	1	0
Above 50	1	0	0	0	1	0	1	0	0	0
Total	8 (5%)	27 (18%)	23 (16%)	2 (1%)	1 (0.7)	10 (7%)	39 (26%)	34 (23%)	5 (3.3%)	0 (0.0%)

Source: *Primary Survey, 2025; Figures in the parenthesis indicate percentage of total respondents*

Regarding affordability of Blinkit's products, it is clearly evident that if we consider 'Indifferent' response as a non-negative affordability then it appears that about 95% (male 95% and female 94%) are capable of buying products from Blinkit. In fact, out of 61 male respondents 57% consider Blinkit's products as 'very affordable' or 'affordable' and 87% is indifferent, On the other hand, out of 88 women respondents the corresponding figures are 57% and 39% respectively. Only 5% of both the male and the female respondents consider Blinkit's products as 'expensive' or 'very expensive'.

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Table 6. Respondents level of Satisfaction with Blinkit by Age and Gender

Age Group	Level of Satisfaction with Blinkit									
	Male					Female				
	Very Satisfied	Satisfied	Indifferent	Dissatisfied	Very Dissatisfied	Very Satisfied	Satisfied	Indifferent	Dissatisfied	Very Dissatisfied
Below 18	3	6	2	0	0	10	8	1	0	0
18-25	14	15	4	0	1	18	26	5	0	0
26-35	3	4	0	0	0	4	0	2	0	0
36-50	1	4	2	0	0	8	5	0	0	0
Above 50	1	0	0	0	1	1	0	0	0	0
Total	22 (15%)	29 (20%)	8 (5%)	0 (0.0%)	2 (1%)	41 (28%)	39 (26%)	8 (5%)	0 (0,0%)	0 (0.0%)

Source: *Primary Survey, 2025; Figures in the parenthesis indicate percentage of total respondents*

In any business transaction consumer's satisfaction is one of the most important factors. Therefore, it become imperative to know the level of satisfaction of our respondents accrues by their dealing with Blinkit. It is clearly evident that 87% (male 35% and female 54%) of our respondents are either 'very satisfied' or 'satisfied' and only 10% (male 5% and female 5%) are 'indifferent'. Here again, if we consider 'Indifferent' as a 'not-dissatisfaction' state then overall 97% (male 97% and female 100%) respondents are satisfied in their dealing with Blinkit. It is interesting to note here that no single female is dissatisfied with Blinkit. Only two male respondents, one in the age group of '18-25' and the other is in the age group of 'above 50' expressed their dissatisfaction with Blinkit.

Table 7. Respondents Payment Preferences by Age and Gender

Age Group	Customers Payment Preferences							
	Male				Female			
	Credit/Debit Card	UPI/ Wallet	Cash on Delivery	Net Banking	Credit/Debit Card	UPI/ Wallet	Cash on Delivery	Net Banking
Below 18	0	0	11	0	0	12	7	0
18-25	1	15	18	0	0	20	29	0
26-35	0	5	2	0	0	5	1	0
36-50	1	4	2	0	1	9	3	0
Above 50	0	1	1	0	0	0	1	0
Total	2 (1%)	25 (17%)	34 (23%)	0 (0.0%)	1 (*)	46 (31%)	41 (28%)	0 (0.0%)

Source: *Primary Survey, 2025; Figures in the parenthesis indicate percentage of total respondents*
(*) Implies less than 1%

Payment preference happened to be an important issue while one shops online. While studying sample respondent's payment preferences, it appears that 51% (male 23% and female 28%) prefers 'Cash on Delivery' and 48% (male 17% and female 31%) prefers to use 'UPI/Wallet'. Only three respondents, two male (one in the'18-25' age group and the other is in the 'above 50' age group) one female (in the 'above 50' age group) pay the price by using their 'Credit/Debit cards'. It is to be noted here that none of the respondent use 'Net banking' for payment.

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6. MAJOR FINDINGS

From the above discussion it is clearly revealed that 'easy to use App' and 'fast delivery' of goods and services appear as the key factors for consumer's acceptance of an online platform. 'Discounts and Offers' is another key element for choosing an online shopping. About one-fourth of our respondents, specially the women respondents, are found attracted by 'Discounts and Offers'. Blinkit is very popular among the young (in the '18-25'age group), especially among the young women. Usage pattern reveals that most of the sample respondents (49%) use Blinkit weekly and only 15% of them use Blinkit daily. It becomes important to note here that the information which provided in this study is only represent respondent's usage of Blinkit but their usages of other online shopping platform is not taken into account.

Most of the respondents are use to shop 'Snacks & beverage' (77%; male 34% and female 43%), 'Groceries' (70%; male 27% and female 43%), 'Personal Care Products' (32%; male 9% and female 23%) and 'Household Essentials' (41%; male 18% and female 23%) from Blinkit. It appears from the above discussion that about 95% (male 95% and female 94%) are capable of buying products from Blinkit. It is evident that 87% (male 35% and female 54%) of sample respondents are either 'very satisfied' or 'satisfied' and only 10% (male 5% and female 5%) are 'indifferent'. If we 'Indifferent' is considered as 'not-dissatisfaction' state then overall 97% (male 97% and female 100%) respondents are satisfied in their dealing with Blinkit.

7. LIMITATIONS OF THE STUDY

The limitations of this study are given below:

- This study is a case study on Blinkit. Therefore, generalization is not possible.
- This study becomes student bias.
- Convenience sampling method is used and the questionnaire is circulated to the residents of Kolkata and Howrah districts and thus failed reflect dynamics of the online shopping behaviour of the population.
- Respondents' frequency of online shopping is estimated on the basis of their shopping from Blinkit and the respondents may shop from online retail platforms other than Blinkit. Therefore, respondents' frequency of online shopping is underestimated.

8. CONCLUDING REMARKS

Online shopping is a large customer market and its growth in India is still not in line with the global market. According to India B2C e-Commerce Report (2013), e- retailing accounts for less than 1percent of the overall retail market in India in 2012 whereas in China it is over 5 percent and it is over 10 percent in UK and USA. India has a huge market but at present only a fraction of internet users in India are online shoppers. The reason could be the way Indian customers feel about high-tech purchasing system and the marketers also understand the depth of customers' intentions.

This study reveals that in India, online shopping is gaining popularity among the young generation. Some people are not yet willing to change their traditional marketing style because of technological complexity in online shopping. It is revealed that 'easy to use App' and 'fast delivery' of products and services are the most important factors that significantly affect customers' selection of online shopping

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platform. Easy payment system is another issue while choosing online retailer. Therefore, online retailing should focus on trust worthy relationship between producers and customers.

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UNVEILING AI'S DUAL ROLE IN SUSTAINABLE WILDLIFE TOURISM

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ABSTRACT

This study explores the transformative potential of Artificial Intelligence (AI) for customer satisfaction and management within sustainable wildlife tourism frameworks. It aims to illuminate AI's role in personalizing experiences, optimizing resource allocation, and assessing environmental impacts with predictive AI. Findings highlight AI's capabilities to enhance resource efficiency, responsible decision making, tailor eco-conscious visitor experiences, and offer unprecedented insights for conservation, drawing insights from Google's SpeciesNet and related AI tools based on previous studies. However, the research reveals ethical considerations, data challenges, and skill shortages. In conclusion, successful AI integration in wildlife tourism demands a symbiosis approach, that demands responsible implementation that maximizes ecological and community benefits with data driven technology and innovative practices to enhance sustainable development.

KEYWORDS. ***Artificial Intelligence; Sustainable Tourism; Efficiency***

1. INTRODUCTION

The 21st century has witnessed an unprecedented surge in tourism, driven by increased accessibility and a growing global appetite for unique experiences. Wildlife tourism, in particular, has emerged as a prominent sector, creating opportunities for economic development, environmental conservation, and cultural exchange. However, this growth has also brought about considerable challenges, including habitat degradation, wildlife disturbance, and the potential for over tourism to negatively impact local ecosystems and communities. Sustainable tourism management, therefore, is not merely a desirable aspiration but a critical imperative for balancing economic prosperity with environmental preservation and societal well-being.

The burgeoning field of Artificial Intelligence (AI) presents a promising avenue for addressing these challenges. AI technologies offer transformative potential across various sectors, to reshape the future of wildlife tourism. With its capabilities to process extensive data, identify intricate patterns, and generate predictive analyses, AI has the potential to dramatically change the way tourism is approached, managed, and experienced. From personalized recommendations and itinerary planning to resource management and environmental impact assessment, AI is poised to revolutionize how tourism is conceived, managed, and experienced. Using AI enables optimized resource allocation, customized experiences, and enhanced conservation measures, providing novel ways to support sustainable operations while reducing negative outcomes.

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One of the key areas where AI can contribute significantly is in enhancing customer satisfaction within sustainable tourism frameworks. By harnessing AI-driven analytics, tourism businesses can gain a deeper understanding of customer preferences, behaviours, and values. This allows for the raising eco-conscious and creation of highly customized experiences that meet individual needs while minimizing ecological footprints. For instance, AI-powered systems can recommend eco-friendly or sustainable lodging, real-time environmental updates, suggest itineraries that prioritize responsible travel options. It enables tourists to make informed choices that align with environmental stewardship.

AI algorithms can analyse data to identify critical habitats, track wildlife populations, and assess the potential impacts of human activities and climate change. Real-time monitoring of environmental conditions through AI-integrated sensor networks and satellite imagery enables proactive measures to mitigate negative impacts on local ecosystems. Furthermore, it has revolutionized resource management and environmental impact assessment. This allows for targeted interventions, efficient resource allocation, and the development of robust conservation strategies.

The success of AI-driven sustainable tourism, however, hinges on addressing several key challenges. Data privacy concerns, technological limitations, and the potential for algorithmic bias are all critical factors that must be carefully considered and addressed to ensure responsible and equitable AI implementation. Moreover, a multi-disciplinary approach is essential, bringing together expertise from ecology, computer science, tourism management, and social sciences to create holistic solutions that address the multifaceted nature of sustainability.

Integration of AI tools such as IBM Watson, Google's SpeciesNet, and others, aims to encourage wildlife and tourism through actionable and responsible implementation of technology. This study aims to explore the potential of AI, as a synergistic force that can amplify the effectiveness of existing conservation efforts and revolutionize the way we approach wildlife tourism augmenting with tools and insights.

2. LITERATURE REVIEW

This review synthesizes research on the rising adoption of Artificial Intelligence (AI) to re-imagine tourism for navigating responsible tourism practices. It focuses on how it has reshaped both practices and perceptions. It will focus on various areas, in order to create a deeper understanding and discuss the opportunities, perceptions and future impact of AI practices on how it will continue to grow and adapt.

The research widely acknowledges the increasing application of AI and its integration in the tourism industry (Buhalis & Amaranggana, 2015). This includes AI incorporation, that helps in customization, better connectivity, and in helping streamline methods that engage with people who have disabilities with voice enabled services (Buhalis & Moldavska, 2022). The trend has also enhanced the sustainability aspect as it is able to track the eco responsibility of each business, this helps them connect directly to the customer's preferences and engagement (Bulchand-Gidumal, 2022) (Chen & Prentice, 2024). The authors appreciate the value of AI and potential challenges while balancing trust by maintaining ethical guidelines (Chi, Gursoy, & Chi, 2022) (Gajdošík & Marciš , 2019) (Gursoy, Chi, Lu, & Nunkoo, 2019). Use of technology and AI practices will enhance economic wellbeing of travellers and meet long term sustainability goals (Kazak, Chetyrbok, & Oleinikov, 2020) (Kong et al., 2022) (Gretzel, 2011). As stakeholders develop and work towards AI this can help revolutionize and shape the new era of tourism (Chen & Prentice, 2024; Kirtil & Aşkun, 2021). As per Shahrizoda & Nargiza (2024) the increased access to virtual assistance and overall digital resources are some benefits to come from this trend. AI needs to be applied through a holistic means, to bring forth more innovation,

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transparency, and societal contributions to address economic, social and ethical standards for informed choices (Rocha et al. (Eds.), 2020) (Sigala, 2018) (Wang, Luo, & Huang, 2020).

AI tools are instrumental in personalizing travel experiences through chatbots, personalized recommendations (Buhalis & Amaranggana, 2015; Mariani & Borghi, 2021), and targeted marketing. AI enhances satisfaction and loyalty by understanding individual preferences (Chen & Prentice, 2024). AI plays a crucial role in promoting sustainability (Hermosa & Arco Castro, 2024). Travellers are presented with eco-friendly travel options (Ferhataj, 2024), including personalized information on sustainable accommodations and carbon impact, further promoting the environmental impact of tourism activities (Hussain & Arsalan, 2024). Machine learning and big data helps in improved demand forecasting and promote new sustainable tourism plans through responsible innovation (Zhang, Li, Shi, & Law , 2020 ; Zheng, Liao, & Lin , 2020). AI can improve methods for what we track and enhance animal activity (Insiderbits, 2024). AI engagement on real time basis with the tourist for any assistance needed or ethical issues as well, helps in creating a more memorable customer experience and relationship with the industry (Mariani & Borghi, 2021). AI systems can help reduce the environment stress on the planet by minimizing waste, managing energy efficiently and enhance eco-friendly activities or travel plans (Suanpang, Pothipassa, 2024), (Majid, et al, 2023) without creating physical harm for our ecosystem (Burns and Benz-Schwarzburg, 2023). It will contribute to improved resource allocations, economic development, and social equality with use of generative AI. (Witt & Witt, 1995). Latent potential of VWT to create ecotourism accessibility, emphasizes conservation. Even though the study acknowledges that the overall cultural immersion is limited (Burns and Benz-Schwarzburg, 2023).

However, adoption of AI comes with certain costs, due to new technologies or changes (Kanagasabai, Swampillai, & Nagendrakumar, 2025). This is coupled with high cost of infrastructure, limited accessibility and concerns such as payments of qualified individuals who can manage the complexities of evolving technological innovations (Ferhataj & Memaj, 2024). Data security and AI safety require ongoing observation in order to prevent algorithm bias and the misuse of the system (Gossling et al, 2025). It would lead to increased energy consumption. Thereby limiting to large technology companies (Gössling and Mei, 2025).

The challenges relating to ethics, data accessibility, digital divide and accountability requires investment in ethical framework and guidelines on AI, data privacy and transparency norms with stakeholder collaboration and research (Hussain and Arsalan, 2024) (Fatima and Arsalan, 2024). Authors recommended exploring the social and ethical implications of AI in tourism and developing more robust and explainable AI models (Kirtil and Aşkun, 2021) use of AI technologies with Blockchain, open communication and innovation system (Dogru et al., 2024) to address concerns regarding data privacy and security for sustainable long term growth (Yörük, Akar, & Özmen, 2024). Forging a symbiotic relationship in tourism must focus on adaptive governance, ongoing integration (Rani and Kanda, 2024) and providing continuing resources for cross cultural collaboration that create community support and understanding to foster responsible practices (Kanagasabai et al., 2025) (Varghese and Pratyusha, 2024). AI's integration of responsible practices in tourism embraces balanced use of technology, tourism, and ethics for sustainable approach in this growing space (Kong et al., 2022) (Reddy, 2021).

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3. RESEARCH AIM AND OBJECTIVES

This research aims to investigate the potential of AI to improve the efficiency of conservation efforts in national parks, specifically focusing on leveraging AI tools for sustainable wildlife tourism. The central objective is to understand the current and future potential of AI including underlying limitations in balancing conservation imperatives with enhanced customer experiences, without exacerbating environmental impacts through overtourism. This will be achieved by:

- To know the various applications of AI for wildlife species monitoring, and assessing the impact of human and climatic changes in national park ecosystems.
- Infer the potential to improve conservation efforts, including resource management, anti-poaching initiatives, and mitigation of human-wildlife conflict with AI.
- Understand the role of AI in personalizing customer experience and promote sustainable tourism practices by nudging travellers towards responsible choices, optimizing visitor flow to reduce overcrowding, and enhancing educational engagement about wildlife and conservation.
- To identify ethical considerations and limitations, such as data bias, privacy concerns, and potential skill gap for ensuring responsible and equitable applications.
- Propose strategies to promote Eco-Conscious travellers by educating tourists and creating awareness by leveraging AI-driven insights.

4. RESEARCH DESIGN

The research will synthesize the findings to provide a comprehensive overview of the potential and limitations of AI in promoting sustainable wildlife tourism. It employs a systematic literature review methodology, drawing upon previously published studies available on Google Scholar and open-access journals from 2010 onwards. The focus will be on studies that explore the application of AI in wildlife conservation, tourism management, and sustainable development. Keywords used will include "artificial intelligence," "wildlife tourism," "sustainable tourism," "conservation," "habitat mapping," "species monitoring," "predictive analytics," "national parks," "customer experience," and related terms. The collected literature is analysed to identifying key themes, findings, and gaps in the existing research, ultimately contributing to the development of actionable strategies for integrating AI into conservation efforts in national parks and beyond.

4.1 PROSPECTS OF AI IN SUSTAINABLE WILDLIFE TOURISM

- AI customizes travel planning as per individual preferences, leading to responsible choices and enhanced visitor experiences and environmental values. AI-driven tools optimize itineraries with sustainable accommodations, activities, and transportation, reducing carbon footprint promoting eco-consciousness.
- Use of AI driven technology, communities can be responsible in their tourism practices to ensure benefits over the time. AI promotes informed decision-making, helping tourists, conservationists or else to make decisions based on ethical and environmental values.
- AI driven technology encourage sustainable tourism practices. Implementation of AI powered systems and learning platforms has initiated efficient resource management of energy, water,

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and waste at tourism facilities. It emphasizes on sustainable resource consumption and better community engagement with interactive AI platforms. Integration of AI with heritage-based locations can help tourists learn about sustainable techniques, in an interactive way to preserve the surrounding communities and protected areas.

- AI enables real-time species and habitat oversight through camera traps and drones, providing vital data for conservation. While Predictive analytics accurately forecast tourist numbers, facilitating visitor management, reducing ecological stress, and protecting ecosystems. AI is known to have a transformative approach, and can be responsible for making AI driven decisions that are more sustainable for the habitats and ecosystems.

4.2 LIMITATIONS OF AI

Initial Investment Costs: High upfront expenses for AI implementation, including infrastructure and specialized training.

- Reliable internet /network access and infrastructure is crucial for effective data collection and real-time analytics. Further it needs trained staff with expertise in AI installation, management, and data interpretation to address ethical considerations.
- AI systems rely on data to operate effectively for accuracy. The challenges relating to bad data, including misinformation, and limited data set can give rise to ethical issues and hinder the AI's ability to generate any beneficial solutions.
- Public trust and concerns regarding data privacy, algorithmic transparency and communication are crucial for promoting responsible use and addressing ethical considerations.
- Tourism that is driven by AI technology must integrate AI with practices that meet the diverse needs of tourists and locals incorporating responsible economic and cultural sensitivity for improved tourist engagement and community welfare.
- Overcoming reluctance from administrative and internal organizational authorities for better use of AI is a challenge without proper ethical guidelines. Discussion

5. DISCUSSION

The research highlights the transformative potential of AI in sustainable tourism. AI is significantly reshaping the way sustainable tourism is evolving with personalized experience and destination management. Use of AI enabled camera known as E-Eye for camera traps at several protected areas and national parks of India such as Kanha National park, Pench National Park in Madhya Pradesh have enabled better wildlife monitoring, habitat mapping and precise environmental monitoring. It helps in identifying vulnerabilities such possible human wildlife conflict, poaching and informing protective measures for ecosystems.

Enhanced personalization stands out as a pivotal benefit. AI-driven recommendations for enhanced personalized accommodations (forest camps, homestays, etc) or activities (trekking, nature walk, bird watching, etc) at destinations reduce the ecological impact. AI has improved operational efficiency through demand analysis for a better revenue growth and higher rates of customer satisfaction. Furthermore, these platforms facilitate community engagement and interaction opportunities supporting cultural and ethical responsibility. Ecotourism camps organized at various sites in collaboration with

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Forest Department and Ecotourism Board in Madhya Pradesh and many other states along with local community aims to promote socio-economic benefits and sustainability in long run.

Effective management through data analytics and AI algorithms, enables administrative authorities and other stakeholders to optimize visitor management and resource management strategies with advance online transparent ticketing and safari booking system in protected areas and national parks. through visitor numbers, revenue, conservation strategies, and other factors that allow for a better, smoother tourism experience. Smart sensors and IOT systems track wildlife movement in buffer areas or adjoining areas to protected areas preventing any threat. Smart AI based multilingual educative videos or voice assistants at entry gates, or exhibit hall of national parks like Pench National Park teach the visitors do's and don'ts at the park, Bann of plastic usage and other good ecological practices for efficient resource management. All the parks have incorporated AI powered systems and renewable sources of energy like solar grids, water reservoirs and harvesting systems, nature-based tourists and community engagement activities at retreat centres for social, ecological and economic well-being.

While integration of AI has numerous benefits however it must not impede the data privacy, ethical considerations and environmental standards. Thus, it becomes imperative to understand both the sides of coin in collaboration of government, administrative body, researchers and local community for harnessing better tourism management strategies with use of AI without tampering or sacrificing the national and community interests.

Suggestions

Leveraging AI's potential in sustainable tourism, necessitates collaboration between researchers, practitioners, policymakers, and communities. This collaborative approach should emphasize the development of integrated AI platforms that are customized to meet the specific needs of destinations, communities, and wildlife conservation. Public Private partnership to create new sustainable models in alliance with researchers, local body and community to promote potential use of AI for ecological conservation and resource optimization might be the key to sustainable tourism development. Government regulatory bodies and framework should encourage adoption of AI and promote sustainable practices by giving monetary or non-monetary rewards / benefits to businesses, to create a sustainable ecosystem and framework.

Prioritizing the integration of ethical metrics into AI solutions to elevate engagement with eco-conscious travellers, and facilitate transparency regarding the environmental advantages of travel choices. Promote funding initiatives, innovation, and strategic partnerships for sustainability and responsible AI use to have long term effectiveness. This involves working through interdisciplinary approaches and making sure that everyone benefits through shared data, open AI, and ethical considerations. It aims to address the limitations related to data privacy, and promote a transparent, safe, and beneficial AI implementation.

However, it necessitates trained and skilled workforce to create personalized learning and development of different stakeholders through educational and training of necessary skills. By embracing these measures, AI can become a transformative tool for improving sustainability, preserving natural beauty, and enabling ethical and culturally sensitive tourism in both regional and global communities.

6. CONCLUSION

The integration of AI into wildlife tourism represents a complex and multifaceted endeavour. While the prospects are considerable – offering a pathway towards enhanced personalization, optimized resource

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use, and strengthened conservation efforts – the limitations, ethical dilemmas, and practical challenges cannot be ignored. The promise of AI as a catalyst for sustainable change hinges on our ability to navigate these complexities thoughtfully and responsibly.

The novel solutions presented, from AI-driven wildlife protection zones and dynamic pricing for ecotourism to virtual reality experiences and community empowerment platforms, offer a glimpse into the transformative potential of AI. To truly harness the power of AI for good, we must prioritize ethical considerations, ensure equitable access, and foster a spirit of collaboration and innovation among all stakeholders. However, these solutions must be implemented with careful consideration of local contexts, cultural nuances, and the long-term well-being of both wildlife and human communities.

AI must not be viewed as a panacea but as a tool that can amplify both positive and negative impacts. To maximize its benefits, we must prioritize a human-centered approach, placing ethical considerations at the forefront and fostering a collaborative ecosystem where knowledge, resources, and best practices are shared freely. This approach must involve ongoing assessments, community communication and long-term support for the overall advancement of AI and preservation of wildlife communities. Ultimately, the successful integration of AI into wildlife tourism depends on our collective commitment to sustainability, equity, and responsible innovation.

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DEMYSTIFYING CHATGPT IN HIGHER EDUCATION AND SDG 4: TOWARDS INCLUSIVE AND QUALITY LEARNING

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ABSTRACT

Artificial Intelligence (AI) has revolutionised many sectors like finance, healthcare, retail, etc extensively for future growth and customer satisfaction. The rapid advancement of artificial intelligence is transforming the education sector too globally. thus significantly improving the knowledge creation, pedagogical practices and various kinds of administrative work.AI technologies, like natural language processing, machine learning, and robotic process automation, are being arranged to restructure the various operations to improve the efficiency of many administrative jobs in various sectors. The most transformative AI tool being the ChatGPT developed by OpenAI, a large language model (LLM), academic institutions are utilising it to the maximum. It has triggered both enthusiasm and concern across academic institutions and communities. ChatGPT provides multifaceted opportunities for administrative work, creating reports, writing research papers as well as helps in personalized learning. On the other hand, it has generated serious concerns regarding ethical use, academic integrity, data privacy, and digital inequality. This research paper tries to explore the concept of ChatGPT in Education Sector, its potential benefits, current applications and its challenges faced by institutions. It has been attached in the framework of the United Nations' Sustainable Development Goal 4 (SDG 4)—which stresses upon the fact of inclusive and equitable quality education and lifelong learning. Moreover, it explores how ChatGPT can serve as a facilitator for improving access, learning outcomes, and pedagogical innovation when ethically integrated. Certain recommendations for institutions, educators and policymakers are mentioned to ensure that ChatGPT strengthens the quality of the education and it is well aligned with the goals of SDG4.

KEYWORDS. ***Artificial Intelligence; ChatGPT; Higher Education; SDG 4; Academic Integrity***

1. INTRODUCTION

Out of the several sectors applying Artificial Intelligence, educational domain too have seen a massive transformation in their education practices. AI-driven technologies and tools have contributed to a large extent in communication, assignments creation and evaluation, curriculum design, institutional decision-making and engaging student fraternity stated by Holmes et al., 2019.

1.1 Advent of AI in Education

Among the various AI technologies, ChatGPT—an advanced language model designed on Large Language Model(LLM) capable of generating human-like text through deep learning—has emerged as one of the most disruptive innovations in the academic communities. It is a generative artificial

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intelligence chatbot developed by OpenAI and released in November 2022.ChatGPT has been widely adopted by students, faculty and researchers for various tasks like conceptual explanation, writing and coding support, literature synthesis, and automating several administrative tasks. (Barrett & Pack, 2023; Biswas, 2023).

Despite its rapid adoption, the integration of ChatGPT into higher education has laid to serious concerns and misconceptions. Concerns over plagiarism, academic integrity, misinformation, data privacy, and the loss of critical thinking have triggered academic debates across universities as stated by McDonald et al., 2024; Xiao et al., 2023.In the research paper given by Wang et al., 2023, it is noticed that, many tutors lack a clear understanding of how ChatGPT works, leading to inconsistent institutional policies and saw some lacunae in the implementation strategies. These challenges explored the need to demystify the technology and develop balanced approaches that would control its pedagogical merits while mitigating the possible risks.

The significance of ChatGPT extends beyond innovation—it aims to achieve the United Nations' Sustainable Development Goal 4 (SDG 4): ensuring inclusive, equitable, and quality education for all. SDG 4 emphasizes educational access, gender equity, digital inclusion, teacher capacity, and lifelong learning (UNESCO, 2023). Online resources claim that ChatGPT can support SDG 4 by expanding access to learning resources, assisting weak and slow learners, and improving pedagogical quality which has been mentioned in the research paper given by Chang et al., 2023; Sain et al., 2024. However, Guizani et al., 2025, states that digital divides and ethical constraints pose risks to equitable implementation, potentially reinforcing existing inequalities.

The objectives of ChatGPT in higher education are:

- To Clarify how ChatGPT functions as a generative AI system.
- Analyze its ethical, pedagogical and institutional implications.
- To evaluate the potential contributions of ChatGPT in achieving SDG 4.
- To provide reasonable recommendations for a suitable integration.

The statistical data provided in Section 4 obtained from various online resources contributes to current scholarly discourse by synthesizing emerging empirical and theoretical insights, offering a holistic framework for understanding ChatGPT's transformative potential within the education landscape.

1.2 Need of AI in Education

With the penetration of internet usage by more than half a billion in the country, the education sector felt an urgent transformation from the traditional teaching-learning to usage of AI-powered tools and technologies. These have been reasonable aligned with SDG4.The reasons are listed below:

- For inclusion of marginalized learners.
- Urgent need for 24/7 on demand services.
- For personalized learning and skill based learning.
- Need for operational efficiencies in the administrative tasks.
- Demanding Teacher's efficiency and reducing workload.
- Increase the real time clarification of subject-specific topics.

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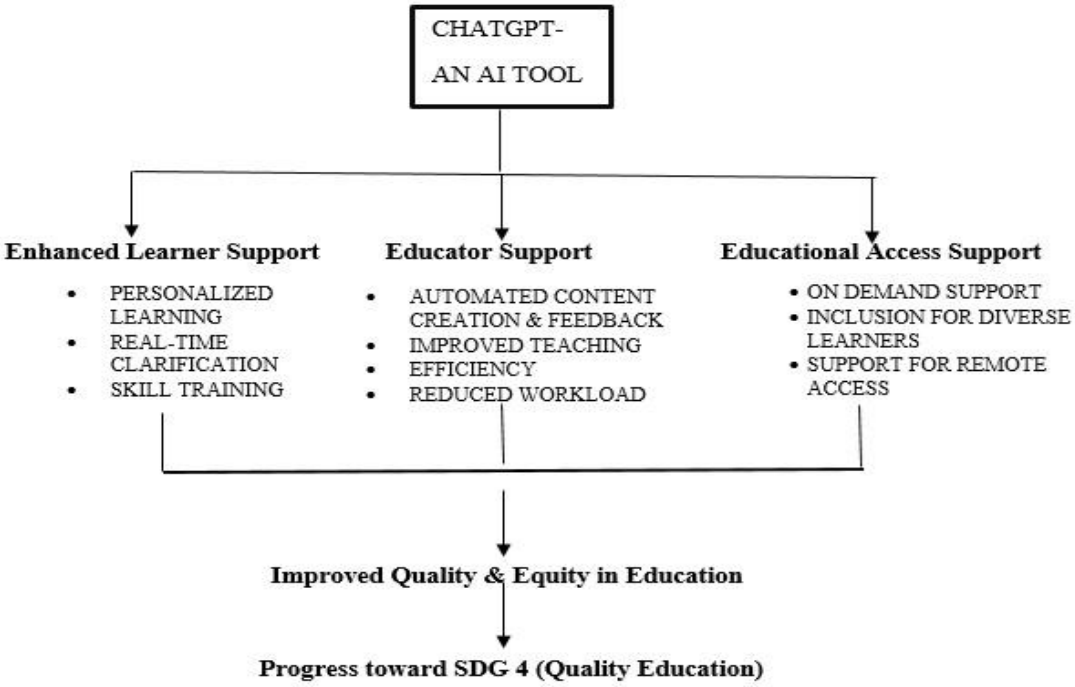
- To assist in writing academic and research reports.
- To assist in remote access.
- Inclusion of diverse learners.

The following figure details the need of AI in education and alignment of ChatGPT with SDG4.

Figure 1. Conceptual Framework



2. LITERATURE SURVEY

Holmes et al., 2019 stated that application of AI in higher education in not new. Machine Learning (ML) and Natural Language Processing (NLP) have enhanced their adoption. Detecting plagiarism, predictive analytics and student support services are also driven by AI. These promote efficiency and productivity and also helps in instructional design.

However, the literature (UNESCO, 2023) points out some recurring challenges: ethical issues, limited digital literacy among faculty, infrastructural constraints and disparities in access. Zawacki-Richter & Marin, 2023 states that AI adoption remains uneven across academic institutions and regions, reflecting inequalities socio-economic zones. Thus these issues influence ChatGPT's integration and effect its potential impact on educational outcomes.

ChatGPT is a **Generative Pre-trained Transformer (GPT)** model and it is trained on huge datasets so as to learn language patterns. Chan & Colloton, 2024 stated that chatGPT can translate languages,create a summary report and problem-solving tasks. On the other hand, (Leitgeb & Leitgeb, 2025 mentioned in his paper that ChatGPT can bypass the traditional educational tools and methods,thus providing a real-time interaction and context-free response to the users.

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In the researches carried out by Barrett & Pack, 2023; Shahzad et al., 2024,it has been mentioned that students are widely adopting it for writing support, conceptual explanation, as well as for and coding development. It has been noted by Sain et al., 2024,that faculty usage still remains lower, mainly due to concerns about job displacement, academic integrity and some reliability issues.Although these factors remain prevalent, ChatGPT is increasingly integrated into assessment, teaching and for several research workflows.

Some pedagogical, ethical and Institutional Concerns still remains in the academic domain. Biswas, 2023 cited some issues regarding academic integrity. Generating essays by chatGPT which is indistinguishable from student writing create further challenges for assessment design According to McDonald et al., 2024, any partial information or misinformation pose as technical limitations, because ChatGPT may replicate harmful options or produce incorrect facts and content. Wang et al., 2023 pointed out that sustainability and data privacy issues further complicate the process of adopting the generated ideas and facts.

Xiao et al., 2023 cited in his paper that some Institutional responses to generative AI differ widely, with some universities banning ChatGPT, few others integrating it, and many adopting unclear policies. This difference among various academic institutions leads to uncertainty about best practices and the need for comprehensive digital literacy frameworks.

Indicators of SDG 4 are increasing access to quality education, diverse learning, strengthening lifelong learning and enhancing pedagogical quality**.** Furthermore, it highlights certain key areas such as harping on ensuring universal access to affordable education, enhancing teacher capacity by reducing their workload, improving learning outcomes, promoting digital literacy, and reducing inequalities (UNESCO, 2023). Gogoi & Chaliha, 2024; SDSN, 2024 mentioned in his study that when AI is responsibly adopted, it can achieve the objectives by increasing its access to quality digital resources and enable dynamic personalized learning.On the contrary, AI can also aggravate the outcome if access is uneven. Guizani et al., 2025 pointed out that unequal digital skills, infrastructure barriers, affordability concerns still persist in low-resource contexts.

ChatGPT offers various pedagogical opportunities for the students. Chan & Colloton, 2024,in his study stated that chatGPT can clear students' doubts, offer a dynamic interaction and customize the individual learning pathway. Students can receive feedback, get assistance in writing without any time limitation. This promotes students' learning and independent access for his academic support. For diverse learners, chatGPT helps in literature searches, creating summarized information and language assistance stated by Barrett & Pack, 2023.This enhances students' participation and help to reduce barriers in the learning pathway.

Hyeon, 2024 noted that faculty support and productivity can be increased by using ChatGPT. Faculty fraternity can design syllabi, create assessments and evaluate, design an interactive communication and also prepare innovative learning materials.

This not only reduces the administrative workload but also allows more time for pedagogy which could be more focused on deep learning practices. It helps in increasing the administrative efficiencies and operational productivity.

Apart from the enormous benefits and positive outcomes, researchers have also mentioned certain challenges and risks.

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- **Academic Integrity and Assessment**-Although ChatGPT can generate student-centric solutions like problem-solving, creating project reports, McDonald et al., 2024 enumerates that evaluation methods should be reconsidered upon, oral exams and process-based assessments could be other options.
- **Bias and Misinformation**-As ChatGPT is trained on massive datasets, it may produce misinformation or biases which may result in inaccurate content. This has been echoed by Wang et al., 2023.Hence without proper verification, it might cause in academic inconsistency and critical thinking process.
- **Digital Inequalities**- Guizani et al., 2025 mentioned that as students are from cross-border regions with various socio-economic disparities, access to ChatGPT depends on device availability and compatibility, subscription issues and digital infrastructure. This poses some challenges among the student community.
- **Readiness of the Institution** - Xiao et al., 2023 noted that lack of education policies, updated AI governance policies, faculty training initiatives and infrastructural hazards could be a major institutional concern.Certain systematic strategies, clear ethical rules and policies, and investment in digital literacy should be implemented in the academic institutions for a successful integration.

Implications for SDG4

Table1: ChatGPT's Alignment with SDG 4 (Quality Education)

SDG 4 Indicator	Description of Alignment	References
Expanding Access to Quality Learning	ChatGPT offers free, 24/7 academic assistance, thereby democratizing access to tutoring and learning resources, particularly for disadvantaged learners.	Chang et al. (2023)
Enhancing Pedagogical Quality	ChatGPT supports active learning, scaffolding, and cognitive engagement, contributing to improved pedagogical quality and learning outcomes.	SDSN (2024)
Reducing Educational Inequities	With inclusive design and appropriate policies, ChatGPT can assist learners with disabilities, language barriers, and limited academic support.	Sain et al. (2024)
Strengthening Lifelong Learning	ChatGPT provides continuous support for self-directed learning, professional development, and upskilling across the lifespan.	UNESCO (2023)
Risks and Challenges	Risks such as digital inequity, AI bias, and unethical use can undermine SDG 4 objectives. Equity-focused governance is essential to ensure fairness.	UNESCO. (2024)

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3. METHODOLOGY

This paper uses data from secondary sources, combines the existing empirical studies, practitioner reports, theoretical analysis and policy documents. The methodology includes:

- Systematic literature review of peer-reviewed journal articles (2019–2025) focusing on generative AI, higher education, and SDG 4.
- Thematic synthesis to identify patterns related to opportunities, challenges, and SDG 4 implications.

Given the constant rapid evolution of generative AI, conceptual analysis is appropriate for mapping emerging trends and offering theoretical insights. Zawacki-Richter & Marin, 2023 mentioned in his study that this approach aligns with methodological recommendations for early-stage technological research.

4. FINDINGS AND DISCUSSION

The available statistics on ChatGPT / Generative AI Usage in Education reveals the following facts:

4.1 HIGH ACCEPTANCE AMONG STUDENTS

- Conrad, M., & Nuebel, H. (2025) carried out in a study of upper-secondary (school) students, where **86%** reported having used ChatGPT for school-related tasks.
- According to a recent report given by Digital Education Council | Home **66% of students** globally use ChatGPT for coursework.
- UK universities, a survey found **32% of students** admit to using ChatGPT *a few times a week given by* https://www.thehrdirector.com/business-news/ai/
- According to the "AI in Education Statistics & Trends for 2025" report, **undergraduate student adoption** is very high — one figure claims ~90% use generative AI tools for some academic work mentioned in AI in Education Statistics & Trends for 2025

4.2 THE NEED AND FREQUENCY OF CHATGPT USAGE

In the upper-secondary school study, students mentioned that they primarily use ChatGPT for:

- Research / information gathering (≈ 64.2%)
- Writing texts / essays (≈ 52.2%)
- Homework help (≈ 48.8%)
- Less frequent use for exam prep (≈ 22.5%) or presentations (≈ 42.5%) (Source: https://www.mdpi.com/2227-7102/15/7/904)

In higher education, a study of computing students found that GenAI (like ChatGPT) is becoming one of the most-used help-seeking resources — in 2024, only ~6.3% of students said they never use ChatGPT as mentioned in https://arxiv.org/abs/2412.16453

A survey from Intelligent.com (cited by ShunStudent), revealed that college students use ChatGPT for the following reasons:

- 69% use it for writing assignments,
- 67% for research,

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- 35% for multiple-choice quizzes. **https://shunstudent.com/article/how-many-university-students-use-chatgpt**

4.3 TIME SPENT USING CHATGPT

In one of the university student samplse (Ho Chi Minh City University of Technology & Education), **66.7%** used ChatGPT for no more than **15–20 minutes per day**, 21.1% for 30–60 minutes, and ~12.2% for 2+ hours daily as given in https://files.eric.ed.gov/fulltext/EJ1429559.pdf

4.4 INSTITUTIONAL POLICIES & ADOPTION

- Less than one-third of the top 500 universities (by QS ranking) had formal policies on generative AI / ChatGPT (as given in https://doi.org/10.48550/arXiv.2305.18617)
- In a study of 116 U.S. research-intensive universities, **63%** encouraged GenAI use; **41%** provided detailed guidance on GenAI in classroom contexts; **50%** offered curriculum or sample activities involving GenAI. Mentioned in https://doi.org/10.48550/arXiv.2402.01659

4.5 PERCEIVED IMPACT

- **71% of teachers** and **65% of students** believe ChatGPT (or similar AI) will be "an essential tool for success" in college / work mentioned in one survey (Programs.com report), https://programs.com/resources/ai-education-statistics/
- Concerns around academic integrity are growing: with widespread student use, many institutions are re-evaluating assessments and exam formats. For example, a UK-based report warned universities to "stress-test" assessments because **92% of students** reportedly use generative AI. Stated in The Guardian

  https://www.theguardian.com/education/2025/feb/26/uk-universities-warned-to-stress-test-assessments-as-92-of-students-use-ai

5. RECOMMENDATIONS

5.1 FOR HIGHER EDUCATION INSTITUTIONS

- To create a comprehensive training on AI policies addressing ethics, integrity and privacy.
- To invest in professors training on assessment redesign and AI pedagogy.
- To guarantee unbiassed access to AI tools through institutional licensing.

5.2 FOR EDUCATORS

- To ensure that ChatGPT is not a substitute for critical thinking but to integrate it as a support tool.
- ChatGPT should be viewed as a transparent, process-based assessment method.
- To engage students in learning how to verify AI-generated information.

5.3 FOR POLICYMAKERS

- To create national AI-in-education guidelines that are aligned with SDG 4.
- To invest in digital infrastructure, especially in weak socio-economic regions.
- To encourage potential partnerships between universities, industries and government.

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6. CONCLUSION

ChatGPT provides a significant role in the education landscape, it provides a massive digital transformation for higher education institutes and among the student community. It enhances the quality of teaching –learning process, creates an interactive pathway for the learners dissolving multilingual barriers. Furthermore, it reduces the burden of teacher's workload and expands access to various online to academic resources. However, the parameters of SDG 4 like promoting diverse inclusion, quality education, lifelong learning are well aligned. It is furthermore observed that, responsible integration is mandatory to overcome the probable risks associated with ethical use of the data, academic integrity and digital biases. As generative AI continues to evolve, more users are getting accustomed to the digital evolution, universities must adopt proactive strategies grounded in pedagogy, ethics, and equity to harness ChatGPT's potential benefits while maintaining the ethics and privacy of higher education.

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WHY NOT?
REFLECTIONS ON SPIRITUAL WISDOM, SOIL, AND ENVIRONMENTAL ACTION

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ABSTRACT

Despite decades of scientific consensus on global soil degradation, policy responses remain fragmented and insufficient. In this brief article, I reflect on the persistence of the soil crisis not only as a possible technical or governance failure, but as a deeper epistemic and cultural limitation in how environmental problems are framed and mobilized. Drawing on three years of multi-sited fieldwork and sustained engagement with the Save Soil movement, I examine the emergence of 'network-spiritual environmentalism:' a contemporary form of environmental action that integrates spiritual meaning-making, digitally mediated mass mobilization, and science-aligned policy advocacy to address this limited response to environmental crises. Focusing on Save Soil as an empirical case, the analysis explores how spiritual practices generate sustained environmental commitment, how networked infrastructures enable global-scale engagement, and how scientific narratives are embedded within broader ethical and cosmological frames. At the same time, I critically assess the limits of meaning-driven mobilization, particularly its partial engagement with the political–economic structures, i.e., corporate concentration and industrial agricultural systems that continue to drive soil degradation. Situating Save Soil within wider traditions of religious and spiritual environmentalism, the article contributes to debates on environmental governance, knowledge regimes, and the role of non-state actors in addressing planetary crises. Rather than proposing spirituality as an alternative to science, it argues for an expanded environmental epistemology capable of integrating scientific rigor, ethical imagination, and democratic accountability at scale.

KEYWORDS. ***Spiritual Wisdom; Soil; Environmental Action***

1. WHY SOIL, WHY NOW

Soil rarely captures public imagination. It lies beneath our feet, often unnoticed, commonly reduced to "dirt." And yet soil is the foundation of all terrestrial life. It sustains food systems, regulates water cycles, stores carbon, and hosts an extraordinary diversity of microbial life. Today, however, the world's soils are degrading at an unprecedented pace. Scientists estimate that nearly one-third of global soils are already moderately to highly degraded, and that if current agricultural practices persist, up to 90 percent of soils could be degraded by mid-century. Scientists have long warned that soil degradation

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undermines food security, water cycles, and climate stability, yet policy uptake and public engagement remain uneven (FAO, 2015; Lal, 2020)

What is striking is not the absence of scientific knowledge about soil degradation, but the persistence of inaction (or limited and sporadic action) in the face of that knowledge. For decades, soil scientists (Mukhopadhyay, 2021; Maitra et al, 2024), agronomists, and environmental institutions have produced robust evidence, policy frameworks, and technical solutions. And yet soil continues to erode, organic matter declines, and biodiversity beneath the surface collapses. This gap between knowledge and action suggests that the soil crisis is not only technical or managerial. It is also cultural and relational. It is a crisis of meaning.

We struggle to act because we struggle to feel connected to soil as something alive, valuable, and inseparable from human wellbeing. We - as humans in general - live primarily in large urban places (Ritchie et al, 2018), and are mostly unaware that soil degradation unfolds slowly, often invisibly. Soil often does not announce itself through dramatic events. Even as its consequences, i.e., food insecurity, water scarcity, climate instability, shape daily life across the planet, the solutions are pushed further and further away from soil. As scholars of climate and culture have argued, environmental crises persist not only because of policy failure, but because dominant modes of sense-making fail to mobilize care, responsibility, and imagination at scale (Ghosh 2016; Jasanoff 2010). Addressing soil degradation, then, requires not only better policies and technologies, but also a shift in how soil is perceived, valued, and experienced. And, throughout history, moments of ecological and environmental precarity have been accompanied by religious and spiritual efforts to reorient meaning, responsibility, and collective life.

It is within this context, I conducted my work for the past three years; and within this strive I came across the global movement of *Save Soil*, where my academic interest has emerged as a creative drive to understand how we can address such complex environmental issues that we face today. I spent the next three years talking to the movements' volunteers, attending public events in Europe, India and the United States. I was a part of policy meetings at COP28 in Dubai, attended conferences at Harvard and MIT, and spent many hours talking to the founder of the movement Jagi Vasu Dev - known to the world as Sadhghru, described as "a visionary, a yogi and a mystic" (Isha, 2025).

2. THEORETICAL GROUNDING

In this article, I reflect on the *Save Soil* movement using the lens of environmental knowledge regimes. This concept refers to the historically contingent configurations through which certain forms of knowledge become authoritative, governable, and actionable, while others are marginalized or excluded. As scholars of power and governance have argued, environmental crises are not addressed solely through the accumulation of scientific data, but through the epistemic frameworks that determine what counts as valid knowledge, who is authorized to speak, and which forms of engagement are considered legitimate (Foucault 1980; Hajer 1995; Jasanoff 2004). Within contemporary environmental governance, scientific expertise has become the dominant source of legitimacy, framing soil degradation primarily as a technical problem to be managed through indicators, models, and policy instruments. While indispensable, this regime has struggled to generate the ethical, affective, and cultural commitments required for sustained collective action, as scientific consensus has not translated into commensurate political or societal response.

Movements like the *Save Soil* one intervene at this epistemic juncture by expanding rather than rejecting dominant knowledge regimes: scientific assessments of soil health remain central, but are

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recontextualized within spiritual meaning-making, embodied experience, and networked public participation.

Drawing on experiential framings of interdependence, the movement renders environmental responsibility self-evident rather than externally imposed, repositioning spiritual discourse, often excluded from policy domains, as a legitimate source of motivation and public engagement. Enabled by digital infrastructures and transnational advocacy networks, *Save Soil* thus operates as a multi-scalar epistemic formation in which scientific authority, ethical vision, and mass mobilization circulate together.

Conceptually, I term this configuration n*etwork-spiritual environmentalism*: a contemporary mode of environmental action that integrates technoscientific evidence, spiritual and existential meaning-making, and digitally mediated collective engagement, thereby widening the epistemic foundations of environmental governance without displacing science itself. Rather than proposing a model to be adopted, this framework invites reflection on how environmental action becomes possible when scientific knowledge is accompanied by forms of meaning that render responsibility lived, experiential, relational, and enduring.

3. ENCOUNTERING *SAVE SOIL*

I have asked Sadhguru several times why a spiritual leader is working on a soil campaign. He consistently replies, in his characteristically calm yet playful manner: 'Why not? Don't I live here too?' This seemingly simple response disarms and reframes the question. Rather than treating environmental action as the exclusive domain of experts or institutions, it asserts shared responsibility rooted in lived presence on the planet (WSDS, 2022).

Save Soil was launched globally in 2021 by Sadhguru and the Isha Foundation, building on decades of spiritual teaching and community engagement (Conscious Planet, 2021). This is a significant initiative, as the foundation relies on the work of more than 17 million volunteers across over 300 centers worldwide (Isha Foundation, 2025). In 2022, at the age of 65, Sadhguru undertook a 100-day motorcycle journey from London to India, crossing 27 countries and engaging with farmers, scientists, policymakers, and citizens to draw attention to the global soil crisis (Forbes, 20025). The journey drew global attention, not only because of its scale, but because it made soil visible. Suddenly, soil became a subject of public conversation, social media engagement, and political dialogue (German Federal Ministry of Agriculture, BMLEH, 2024; Humus, 2025; Galacho, 2025; ; Potsdam Institute for Climate Impact Research, 2025).

Throughout the years, I talked to heads of governments, and ministries, to directors of United Nations departments, to soil scientists, to public figures (singers, sportsmen and actors), farmers, and to people engaged in making the movement a reality on the ground. They all were in support of the work done by the *Save Soil* movement, amazed by the impact and support it has gathered in a short time. This work threw me in the midst of the movement, while also allowing me to be an outsider, to ask critical questions, to judge and qualify, to persist in asking the questions I deemed as important. But mostly it allowed me to observe the growing movement from within - a privilege that so many academics do not get to have. Thus, this analysis and reflections draw on multi-sited fieldwork and sustained engagement with the *Save Soil* movement. While this proximity enables insight into internal practices and participant perspectives, the aim here is to be reflective and analytical rather than evaluative.

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Thus, for me - as for so many other observers - the campaign's reach was unexpected. Millions - engagement is calculated to have exceeded 3 billion people (IUCN, 2022) - engaged online; governments signed memoranda of understanding; international organizations acknowledged soil as a policy priority (EU Missions, 2025; UNEP, 2023). Yet to understand Save Soil solely through numbers or visibility would be misleading. Its momentum cannot be explained by communication strategy alone. *Save Soil*'s resonance lies in how it reframes soil not as an abstract environmental concern, but as something intimately tied to human life.

In retrospect, from an analytical perspective, Sadhghuru's widely publicized journey functioned less as spectacle than as a catalyst. It opened spaces for conversation, drew attention to an often-overlooked issue, and connected disparate actors into a shared narrative. In doing so, it exemplified a broader strategy: using visibility to render soil speakable, relatable, and urgent.

4. SPIRITUALITY AS ENVIRONMENTAL MOTIVATION

Read in this way, the *Save Soil* movement functions less as a one-size fits all solution to soil degradation than as a site through which to reflect on how spirituality, science, and collective engagement are being reconfigured in response to planetary crisis. While *Save Soil* is often encountered through its digital reach or policy engagements, its momentum cannot be understood without attending to the spiritual sensibility that animates it. Rooted in the practices and teachings supported by the Isha Foundation, this world-view foregrounds relationality and interdependence, offering a way of engaging soil that is experiential rather than instrumental.

For many participants in the movement, I talked to (and I talked to approximately one hundred), involvement in *Save Soil* is not perceived as mere activism. It is understood as an extension of their intimate inner transformation cultivated through their spiritual practice, particularly programs such as *Inner Engineering*. Sadhguru often explains the movement's volunteer commitment by pointing to a shift in perception: through meditation practices, individuals begin to experience the environment not as an external domain, but as an extension of their own life. (Sadhguru 2016, 2024)

This shift is often articulated through simple, embodied examples. Trees exhale what humans inhale. Soil produces the food that becomes our bodies. (Sadhguru, 2017). Attending to breath or observing the living quality of soil cultivates an awareness of interdependence that is felt rather than abstract. In this experiential register, soil is no longer inert matter; it becomes a living matrix integral to personal and planetary wellbeing. Rather than offering a solution, these practices cultivate a way of being with environmental crisis that makes sustained responsibility imaginable.

This spiritual dimension generates a form of motivation that differs from many conventional environmental activists campaigns. Rather than mobilizing through fear, guilt, or urgency alone, *Save Soil* purposefully accentuates this mobilization through meaning (Isha, 2013). Scientific data about soil degradation is present and central (and it is spectacularly curated and presented), while being embedded within a broader ethical and cosmological narrative. This integration helps explain why participants often describe sustained engagement rather than episodic activism.

Yet, this mode of engagement also reveals an important tension. Precisely because *Save Soil* mobilizes participants through meaning, relationality, and ethical alignment, it tends to place less analytical emphasis on the political–economic actors and structural dynamics that drive large-scale soil degradation. Industrial agriculture, extractive supply chains, agrochemical inputs, and global food-market dynamics are repeatedly identified by scientists (Brunelle et al., 2024; Emmanuel et al, 2025;

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FAO, 2025; Rosier et al., 2025) as major drivers of land and soil degradation, including erosion and soil organic matter depletion, in major assessments and governance reports (FAO & ITPS, 2015; UNCCD, 2022; IPES-Food, 2017). A small number of multinational corporations dominate seed, fertilizer, and pesticide markets, shaping farming practices worldwide through economic dependency and policy influence, often at the expense of soil health. (Fuglie, 2012, Clapp, 2021)

Without sustained critical engagement with these actors, and with the economic infrastructures that normalize soil depletion as an externalized cost, efforts to restore soil risk to remain partial. At the same time, meaning-driven mobilization alone cannot confront the political–economic structures, corporate concentration, input dependency, and market incentives that continue to normalize soil degradation at scale. Addressing the soil crisis holistically therefore requires not only cultivating care and responsibility across scales and fields, but also engaging more directly with the political economy of agriculture that often continues to undermine the very conditions of soil regeneration.

5. NETWORKS, SCALE, AND COLLECTIVE ENVIRONMENTAL ACTION

Nevertheless, one of the most distinctive features of *Save Soil* is its ability to operate simultaneously across multiple levels of engagement. At one end are grassroots volunteers organizing local events, school programs, and farmer outreach. At another are high-level policy discussions with national governments, United Nations agencies, and international institutions. Connecting these layers is a dense digital ecosystem, social media platforms, livestreams, and online campaigns, that allows messages about soil to circulate rapidly and widely.

This networked structure matters. Environmental problems such as soil degradation unfold at planetary scale, but they are experienced locally, unevenly, and often invisibly. The movement's multi-level organization helps bridge this gap. A farmer speaking about declining soil fertility in one region can become part of a global conversation about food security and climate resilience. A scientific report on soil organic matter can be translated into accessible narratives and shared across platforms, reaching audiences far beyond academic or policy circles. Thus, through coordinated digital platforms and volunteer networks, *Save Soil* has reached audiences across more than 180 countries. (Atlas of the Future, 2025)

Digital visibility is often treated with suspicion in environmental and public discourse, and not without reason. Social media can distort messages, reward simplification, and amplify spectacle. *Save Soil* is not immune to these dynamics. Yet visibility is also a political resource. Soil degradation has historically suffered from invisibility, occurring slowly, underground, and outside the media spotlight. By making soil visible and publicly discussable, *the Save Soil* movement has helped shift it from a marginal technical issue to a matter of collective concern. Rather than mobilizing primarily through fear or guilt, the *Save Soil* movement frames environmental action as an extension of inner responsibility and awareness (Global Agriculture, 2025).

Importantly, the movement's networked structure redistributes agency. Rather than relying solely on centralized leadership, *Save Soil* enables participants to see themselves as actors within a global effort. Volunteers often describe a sense of belonging to something larger than their immediate context, while remaining engaged in locally meaningful actions. This combination of global vision and local grounding helps explain the movement's durability and reach. Ultimately, the question raised by *Save Soil* is not

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only how soil is governed, but how human beings come to recognize themselves as participants in the living systems they depend upon.

6.WHY THIS MATTERS: BEYOND SAVIORS AND SOLUTIONS

It is important to be clear about what movements as *Save Soil* do, and do not, offer. There is no magic solution to the global soil crisis. There is no single campaign, leader, or policy that can reverse decades of extractive agricultural practices overnight. Soil degradation continues, and the challenges facing farmers, ecosystems, and communities remain profound.

Yet dismissing movements like *Save Soil* because they do not "solve" the problem would miss their significance. Environmental crises are not resolved through solutions alone; they are addressed through sustained shifts in values, relationships, and collective priorities. As scholars of religion/spirituality and environmental studies have long argued, meaning-making traditions play a critical role in shaping ethical orientation and public engagement in times of planetary crisis (Taylor, 2009; Tucker and Grim, 2001).

Sadhguru's role in the movement is often interpreted through the lens of charisma, inviting both admiration and skepticism. It is crucial, however, to resist savior narratives. *Save Soil* does not (and will not) succeed because of one individual alone, but because it mobilizes a distributed network of people, practices, and institutions. As scholars have noted, scientific knowledge alone rarely produces sustained political will without accompanying narratives of meaning and responsibility (Ghosh, 2016; Jasanoff, 2010). High-visibility actions function less as heroic interventions than as catalysts, sparking conversations, drawing attention, and opening doors that would otherwise remain closed.

From a broader perspective, *Save Soil* reflects a growing recognition that environmental governance cannot rely exclusively on technocratic expertise. Scientific knowledge is indispensable, but it does not automatically generate care, responsibility, or political will. Movements that integrate scientific insight with spiritual meaning-making address this gap directly. They speak to how people understand their place in the world, not only how they manage it.

Ultimately, *Save Soil* invites a reconsideration of how environmental action happens. It suggests that restoring soil requires more than new technologies or regulations. It requires restoring our relationship with the ground that sustains us. Whether approached through spirituality, ethics, culture, or policy, the underlying insight remains the same: without a shift in how soil is valued, efforts to protect it will remain fragile.

In an era marked by ecological exhaustion and social fragmentation, movements that connect inner awareness with collective action deserve careful attention. Not uncritical celebration, but thoughtful engagement. *Save Soil* offers one example, evolving, and deeply human, grounded in science and data of how environmental action might be reimagined for a world in crisis.

7. CONCLUSION: EXPANDING KNOWLEDGE REGIMES FOR PLANETARY FUTURES

Here I approached and detailed the *Save Soil* movement not to evaluate its success or prescribe its replication, but to reflect on what contemporary spiritual and religious engagements can contribute to addressing large-scale environmental crises marked by uncertainty, fatigue, and fragmentation.

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A network spiritual environmental movement, like *Save Soil*, uses a contemporary mode of environmental action to integrate scientific knowledge, spiritual meaning-making, and digitally mediated mobilization at planetary scale. I therefore suggest that rather than approaching *Save Soil* as an anomaly or as a purely charismatic intervention, we need to situate the movement within broader debates on environmental governance and knowledge regimes, demonstrating how it expands the epistemic foundations through which soil degradation is understood and addressed.

Overall, the persistence of global soil degradation despite decades of scientific consensus underscores how environmental crises are not solely failures of data, technology, or policy design, but also failures of sense-making. Dominant knowledge regimes have produced insights into environmental decline, yet they have struggled to generate the cultural resonance, ethical orientation, and public engagement required for sustained collective action. Movements like *Save Soil* suggest one way of intervening at this epistemic limit by recontextualizing scientific evidence within experiential and relational frameworks that render soil as a living system intimately connected to planetary and human life. In doing so, the movement does not displace scientific authority; it amplifies and mobilizes it through expanded modes of legitimacy and engagement.

By operating through complex infrastructures, *Save Soil* enables spiritual discourse, scientific expertise, and policy engagement to circulate together across scales. This multi-tiered configuration allows grassroots experience, expert knowledge, and ethical vision to become mutually reinforcing rather than hierarchically ordered. Conceptually, environmental governance may be strengthened when knowledge regimes are widened to include forms of understanding that motivate care, responsibility, and collective imagination alongside technical expertise.

At the same time, we also need to emphasize the importance of critical scrutiny. Network-spiritual environmentalism, like any large-scale mobilization, raises questions of accountability, transparency, and authority, particularly when spiritual leadership intersects with policy domains. Only by reflecting on and addressing these tensions can such movements claim to operate responsibly and command credibility within democratic systems.

Ultimately, the significance of movements like Save *Soil* lies not in their promised solutions, but in the structural and epistemological possibilities they reveal. As environmental crises intensify, the needed action will increasingly depend on forms of engagement that bridge scientific data and meaning, expertise and lived experience, governance and imagination. By expanding rather than rejecting dominant knowledge regimes, network-spiritual environmentalism points toward the possibility of a more inclusive and potentially more effective epistemic foundation for addressing emerging planetary challenges. Whether environmental governance is prepared to meet this expansion with the necessary intellectual openness, ethical commitment, and institutional imagination remains an urgent question, for all those who live "here."

The answer implied by the question *"Why not?"* does not dismiss the importance of expertise or institutions, nor does it suggest that spiritual leaders should replace them. Instead, it gestures toward a form of responsibility grounded in shared inhabitation, an ethics that begins not in authority, but in our presence on the soil we inhabit together.

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SITUATING SOUTH AFRICA IN THE WORLD SYSTEM: A REASSESSMENT OF DEPENDENCY THEORY

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ABSTRACT

This paper critically examines the relevance of Dependency Theory—particularly its radical and world-systems variants—in understanding the developmental trajectory of South Africa. Drawing on the debates between Modernisation Theory and Dependency Theory, the study highlights how historical patterns of colonial extraction and unequal integration into global capitalism have shaped divergent paths of development in the Global South. Using South Africa as a focal case, and comparing it with peripheral Zambia, the paper evaluates key economic indicators such as export composition, technological complexity, labour distribution, external debt, and human development outcomes to locate South Africa within the semi-periphery of the world economy. The analysis demonstrates that South Africa's partial industrialisation, diversified economy, and growing service sector distinguish it from peripheral states, while its continued dependence on core technologies and capital prevents its transition into the core. The paper further explores how South Africa exercises regional dominance, creating asymmetric relationships with neighbouring African states while remaining embedded in global structures of dependency. Ultimately, the study underscores the enduring explanatory power of Dependency Theory—especially the World-Systems model—for interpreting contemporary development hierarchies and shifting power dynamics in global capitalism.

KEYWORDS. ***Dependency Theory, World-Systems Theory, Semi-Periphery, South Africa, Global Development***

2. INTRODUCTION

When we talk of the major theories attempting to explain the postcolonial interpretations and approaches to development, both Modernisation Theory and Dependency Theory acquire the two primal spots in this aspect. Both these theories are unique in their own way because they uphold the differences in their approach owing to the social, economic and political milieu in which they were born. While the Modernisation theory was born in the 1950s and focused on the transition of traditional or underdeveloped societies into developed ones (measured in Western terms), the Dependency theory arrived somewhat late and majorly as a critique of the Modernisation theory and the international capitalist system that it so dearly upheld. To put it simply, the Modernisation theory was accused of being Eurocentric in nature since it had suggested that the third world countries were underdeveloped simply because they were not enthusiastic about the process of industrialization or adopting anything modern. When W.W. Rostow presented his famous five stages of economic growth, it was criticized of overlooking colonization and adopting a straitjacketed approach with a one-fits-all model that does not genuinely probe the reasons for underdevelopment.

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3. DEPENDENCY THEORY

This theory emerged in the second half of the 1950s from Latin America and contextually so because it was an attempt to explain the economic conditions of the newly liberated nations. It can be defined as the explanation of the backwardness of these third world economies and connecting it with historically biased set-ups like colonialism. In very simple words, dependency theory can be understood to be when the development and progression of the economy of one country directly affects the economic development of another, thereby making the latter country dependent on the former. What must also be understood is that Dependency theory is not a unitary theory but rather a collection of several theories and frameworks, all of which are attempting to explain this phenomenon of underdevelopment in specific parts/regions of the world. We can broadly classify it into various categories – the moderate wing propounded by Raul Prebisch, the Radical wing spearheaded by Andre Gunder Frank and finally the World Systems Theory by Immanuel Wallerstein. We will be briefly exploring the latter two. A.G. Frank deriving from the same basic tenets of the Dependency theory also reads the exploitation of the current underdeveloped nations from a historical perspective of being colonized and thereby brings about his theory of the development of the underdeveloped and subsequently also, the dichotomy between the 'metropolis' and the 'satellite'.[1] He made a categorical and periodic study of history and divided it into the mercantile period (1500-1770), industrial capitalism (1770-1870) and finally culminating in imperialism (1870-1930). The Metropolis-Satellite relationship, Frank feels, began in the colonial period itself since the colonial powers always looked at establishing new cities in the Third World which would help in extraction of economic surplus and resources. These national cities then became the 'satellites' of the foreign states and would consequently, collect economic surplus (raw materials, minerals, commodities, profits) from other devolutionary units like village, local and regional capitals. Thus, the same historical process which led to the development in the 'metropolis' (First World) always resulted in the underdevelopment of the 'satellite' (Third World).

4. WORLD SYSTEMS THEORY

This appears to be the most comprehensive among all the offshoots of dependency theory and unlike the moderate or the radical theorists who are majorly restricted to studying the economic relations between the developed and underdeveloped states only, the world systems theory also involves the matter in a larger geographical framework. Wallerstein reflects a touch of Leninist thought when he outlines that the present happenings of the world could only be comprehended through the lens of the spread of global capitalism which mainly stood for production for the market, gaining profit which then leads to an unequal relation between the developed and underdeveloped states. He also propounds that this unequal spread of capital has resulted in a hierarchical structure of states within the world economy, with majorly 3 circles of states – Core, Periphery and the Semi Periphery. In very simple terms, the 'Core' denotes the developed countries from the so- called Global North and includes countries like USA, Western European countries, Japan etc. These countries are supposed to be industrially and technologically advanced and which is consequently aided by the support of the federating units and the presence of a strong middle class and massive working class. Conversely, the term 'Periphery' refers to those groups of states which are part of the less developed Global South and are usually weak in nature, have a small middle class and cheap agricultural and industrial labour and are mainly suppliers of raw materials. Usually the 'Periphery' is viewed to be dependent on the 'Core' in several ways. Wallerstein interestingly introduces a third category of states, namely the emerging economies (termed 'Semi-periphery') like India, South Africa and Brazil which on the one hand have a large peasant population and on the other hand have seen a fair amount of industrialization and urbanization lifting them out of the economically dependent status. These semi-peripheral countries also adopt protectionist

[1] Metropolis- developed First World state; Satellite – underdeveloped Third World state

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economic policies since they are always insecure about falling back to the lower category. Thus, the bottom line remains that the Core exploits the Semi Periphery which in turn exploits the Periphery. The World Systems Model is like a living organism with the location of each nation-state and their labels being all relative and flexible.[2] Lastly, it is also alleged that the semi-peripheral countries act as a buffer between the other two ends and at times even leads to a division of solidarity in the periphery camp against combating the Core countries. However, the theory ends with a very interesting suggestion that the future would be a socialist world government (replacing the existing global capitalist regime) which would end the exploitation of the Semi-Periphery and Periphery countries.

5. THE CASE OF SOUTH AFRICA

Almost the entire African continent had been colonized at different points of time in history by various first world powers leading to most of the newly independent nations being dependent on the 'Core' countries for their economic development. As far as considering South Africa as a 'Semi-Periphery' nation is concerned, several scholars have firstly tried to locate and justify such a position. As far as the study of C.P. Terlouw (1993) was concerned, it held South Africa as having one of the lowest degrees of core-ness even among the semi-peripheral countries based on several factors like economy, military and politics. Giovanni Arrighi and Jessica Drangel (1986, 69) present a stronger case for South Africa qualifying as a semi-peripheral state basing their study on the GNP per capita measures while labelling countries with their positions in the global division of labour. Similarly, Patrick McGowan and Fred Ahwireng- Obeng (1998) even went on to term South Africa as the regional hegemon since theirs was the only semi-peripheral economy in a region which was otherwise surrounded by peripheral economies and used the patterns of commodity trade as the yardstick for such a labelling. Finally, William Martin and Wallerstein (1990) identified South Africa as a reliable member of the semi-peripheral arc, purely based on its economic relations with both the Core and the Periphery. When we are attempting to locate any state in either of the three brackets, we primarily look at the nature of its exports and imports and only after assessing whether a country is economically stable can we also question the stability of the political sphere as being easily influenced (or not) by external pressures. Thus, even in this case economy becomes the independent variable and all political factors (like nature of class relations, civil society etc) are all dependent variables. We will now be studying these variables individually so as to understand why South Africa classifies as semi-peripheral state and how the Dependency theory remains relevant to decoding that. In this effort we will also be comparing South African parameters with that of another African state – Zambia, which is peripheral in nature to better comprehend the semi-periphery status.

6. HISTORICAL BACKGROUND

When Jan van Riebeeck landed at the Cape as governor for the Dutch East India Company in 1652, it heralded the age of European settler origins in the present Republic of South Africa. However, it was only in 1800s that one could clearly classify South Africa as a peripheral state with its major raw materials, in the form of wool from Cape and sugar from the Natal region being exported to UK. As far as industrialization was concerned, the entire process got a huge boost after the discovery of the diamonds in the Free State and gold in Witwatersrand in 1886. It is widely believed that the global depression of the 1930s (accompanied by the production of war arms) led to an increase in the Import- Substitution-Industrialization which is the nascent step portraying development and the formation of a domestic industrialist and capitalist class which emerged after the happenings of World War 2 and it slowly being considered as a semi-peripheral state.

[2] For example, Greece fell from being a Core country (as part of the EU) after the financial crisis of 2008.

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7. SOUTH AFRICAN ECONOMY POST SECOND WORLD WAR

The South African economy almost after two decades of relative calmness became quite restive in the 1970s with several demonstrations like the wildcat strikes in the 1970s, the Soweto uprising of 1976 and several other such clashes in urban South Africa throughout the 1980s. There was the gradual emergence of the Blacks as a wage-earning class which was prompted by the need of a competitive world economy and many believed that it was these unexpressed grievances of this section of population that was being expressed in these protests. It was evident in 1948 itself that the South African industries had become highly dependent on cheap black labour which even included certain skill labours. Thus, this mutual need for running the economy resulted in the setting up of black townships around the so called 'White South Africa' so that they could have permanent stay in those ghettoes. But all this ultimately led to more turmoil for the apartheid regime, and they finally realised that they had to somewhat reform their general living conditions. This situation is very much reflective of the 'metropolis' – 'satellite' setup that AG Frank had propounded and shows an exploitative relationship even within certain parts of the same state, thus showing that dependency not only occurs at the macro level but also the micro level.

8. ANALYSING ECONOMIC PARAMETERS

To understand the relevance of the dependency theory and properly locate a state's position, one must always study the export basket of that particular nation. We can observe that while 49% South African exports comprise ofprimary resources, for a peripheral country like Zambia the same number shoots up to 89% thereby showcasing to the world that they would import finished goods more, something typical of a peripheral country. Also, as far as the shares of South African exports are concerned almost 44% of them consist of high technology products which when compared to Zambia is only 3%.

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South Africa

	Value (US$ million)	% growth per annum 1994–98	% share in exports
Primary products	6175	2	36
Natural resource-intensive manufactures	2169	–14	13
Labour-intensive manufactures	1175	14	7
Technology-intensive manufactures	3608	11	21
Human capital-intensive manufactures	3826	6	23
Totals	16593	19	100

Zambia

	Value (US$ million)	% growth per annum 1994–98	% share in exports
Primary Products	125	44	23
Natural Resource-Intensive Manufactures	347	–12	66
Labour-Intensive Manufactures	40	13	8
Technology-Intensive Manufactures	2	1	2
Human Capital-Intensive Manufactures	5	7	1
Totals	526	64	100

Source: International Trade Centre (2000A)

9. INDICATORS ON EXPORT PERFORMANCE, 1998

Africa being a mineral-rich continent has also seen the historic exploitation on this front which continues till date, while the peripheral Zambia exports Copper, South Africa is somewhat less dependent on this export of minerals to run the country and one can say that it has diversified its economy.[3]This is evident because South Africa has replaced its traditional sectors (agriculture, mining etc) with growth in newer sectors like tourism, manufacturing, with the biggest surge being registered in the finance and insurance sector which in ten years has seen an almost 6% increase as far as the GDP shares of 1991 and 2000 are concerned.[4] Again, keeping in tune with its identity as a semi-peripheral country and the records of the South African Department of Finance (1998), South Africa not only imports goods from the developed countries (mostly from Germany, USA, UK, Japan) but also exports several manufactured/finished goods to the other countries of Africa (McGowan and Ahwireng-Obeng 1998). Zambia, on the other hand, imports several goods like

[3] The South African Department of Finance (1998) rightly says, "South Africa has a modern, well-diversified economy in which agriculture, mining, secondary industry

[4] The Finance and Insurance sector had a registered a growth from 14.8% of the GDP to 20.2% in 2000.

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crude oil, chemicals, machinery etc from both core and semi-peripheral countries like the UK, Japan and South Africa. Even when we look at the division of the working population, it is very evident that the South Africans were concentrated more in the service sector (54.5%) than the industrial sector (40.9%), thereby highlighting to the world that they had uplifted themselves from the peripheral status of countries like Zambia where more than 60% of the workforce was still concentrated in the agricultural sector.

	South Africa		Zambia	
Economic Sector	Population (thousands)	%	Population (thousands)	%
Agriculture	622	4.6	2390	65.7
Industries	5569	40.9	442	12.2
Services	7426	54.5	804	22.1
Totals	13618	100	3636	100

Source: African Statistical Yearbook (1998)

10. DISTRIBUTION OF ECONOMICALLY ACTIVE POPULATION (1997)

Probably the best way of understanding dependency would be reading the numbers of the external debt that a country has and the Official Development Assistance that had to be opted for as a response. While the external debt of Zambia was almost seven times than that of South Africa, even its receipt of Official Development Assistance was 16.7% of the GNP as compared to only 0.4% for South Africa. Both these parameters indirectly hint at the fact that South Africa was in a much healthier shape, economically, to ward off any kind of external influence and affect its domestic politics and its process of democratization.[5]

	South Africa	Zambia
Net private capital flows	3,610	79
% of GNP*	2.43	2.26
FDI	1,725	70
% of GNP	1.32	2.0
External debt	25,222	6,758
% of GNP*	19	136
Official Development Assistance (US$ per capita)	12	65
% of GNP	0.4	16.7

(Million US$ except where noted)
* GNP US$ 1997, http://www.undp.org/hdro/Backmatter2.pdf
Source: World Bank World Development Report 1999/2000 (1999:271)

[5] As per 2021 World Bank data, South Africa had 13.5% of their GNP as the external debt while Zambia had 60.7% of their GNP as external debt, thereby making it amply clear of the role of South Africa as a semi- periphery nation.

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11. AID AND FINANCIAL FLOWS (1997)

Finally, when we compare the HDI of both these countries, it can be observed that South Africa far outperforms Zambia on almost every count and thereby displays that a semi-peripheral country is bound to have greater human development than a peripheral state but falls far behind 'Core' Scandinavian countries like Sweden and Norway.[6]

Rank	Country	Life Expectancy At Birth (years) 1999	Adult Literacy Rate (% age 15 and above) 1999	Combined First-, Second-, And Third-Level Gross Enrolment Ratio (%) 1999	Real GDP per capita (PPP$) 1999	Life Expectancy Index	Education Index	GDP Index	Human Development Index (HDI) value 1999
High Human Development									
1	Norway	78.4	99	97	28,433	0.89	0.98	0.94	0.939
20	Italy	78.4	98.4	84	22,172	0.89	0.94	0.90	0.909
40	Bahrain	73.1	87.1	80	13,688	0.80	0.91	0.82	0.824
Medium Human Development									
60	Macedonia	73	94	70	4, 651	0.80	0.86	0.64	0.766
80	Paraguay	69.9	93	64	4,384	0.75	0.83	0.63	0.738
94	**South Africa**	**53.9**	**84.9**	**93**	**8,908**	**0.48**	**0.87**	**0.75**	**0.702**
Low Human Development									
130	Bhutan	61.5	42	33	1,341	0.61	0.39	0.43	0.477
143	**Zambia**	**41**	**77.2**	**49**	**756**	**0.27**	**0.68**	**0.34**	**0.427**
162	Sierra Leone	38.3	32	27	448	0.22	0.30	0.25	0.258
Sub-Saharan Africa		**48.8**	**59.6**	**42**	**1,640**	**0.4**	**0.54**	**0.47**	**0.467**
High income (OECD)		78	99	92	26,050	0.88	0.97	0.93	0.928
World		66.7	79.2	65	6,980	0.7	0.74	0.71	0.716

Source: United Nations Development Programme (2001:142–143)

Human Development Index, 2001

12. ANALYSING RELEVANCE

As evident from above, South Africa can be said to have attained the status of an intermediary/semi-periphery state because owing to its partial industrialization and partial production of primary goods, it is some steps ahead of the periphery on the production ladder but also several steps behind the Core states. Thus, while it still imports unskilled labour from the surrounding peripheral states, it is still dependent on technology from the First World nations. This unique position of being in the intermediary is also reflected in the foreign policies of these states, just like how India tried to maintain cordial relations with most Core

[6] As per the latest HDI rankings of 2022, though both these nations have witnessed a fall in their rankings with South Africa securing 109th rank and Zambia securing 154th rank one cannot but help notice the differences between a semi-peripheral and peripheral nation, respectively.

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countries and also exports various life-saving drugs to several poor African nations. The advantage of being an intermediary state is that one gets to manoeuvre its comparative political and economic independence and accrue consequent advantages. South Africa has now gradually moved beyond being completely dependent on the Core states (like Britain) economically to now learning how to squeeze opportunities out of these relationships. However, it is not just South Africa's doing alone because after the Second World War Britain had slowly lost its pre-eminent status on the global stage and other Core states like France, USA, Japan etc., had gradually replaced it. Thus, South Africa now has also begun to define the terms of trade and tried its hand at exercising some sort of regional economic hegemony within Africa itself. As was evident from the arguments and data above that while South Africa initially supplied gold and other natural resources to the European countries, it has now sought to change this scene of dependency by investing in their own governmental cooperations, infrastructure, demanding local industries (especially automobile) to make and assemble products within their borders and going toe to toe with the Core countries by seeking to transform certain tariff and licensing policies so that they can trade on more equal terms. As a result, the world has witnessed the birth of a South African imperialism because the South African government has now taken over and started controlling key sectors of the economy. There have been attempts to domesticate several foreign companies, which in the neighbouring countries could almost be termed as engulfing. However, even the core countries or the company directors have not really demonstrated any genuine remonstrations as a trade-off against the apartheid social policies that they had once propagated and from which they still draw indirect benefits. Finally, when we are talking about trade links between countries, we must also realise that certain links are qualitatively different from the others. For example, while the US has a lot more trade ties with Europe than with the Latin American countries, the former represents a symmetrical relation and the latter, one of subjugation and dominance. Interestingly, in the case of South Africa which has a huge chunk of export-import trade relations with the Core countries (like US, Japan, Germany), the relations can be classified as that of dependency. Conversely, its comparatively minuscule total trade relations with other African countries sees South Africa in a position of dominance. It is in locating this nuanced behaviour of the semi-periphery that the Dependency Theory (particularly the World Systems Theory as a subset) has been so relevant, an embodiment of explanations overlooked by other theories of development.

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UNDERSTANDING BHAKTI YOGA IN GAUDIYA VAISHNAVISM: A CASE STUDY BASED ON BHAKTISIDDHANTA SARASVATI'S RELIGIOUS PHILOSOPHY OF KRISHNA CONSCIOUSNESS

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ABSTRACT

This paper examines how Bimala Prasad Datta, later known as Bhaktisiddhanta Sarasvati Thakur, the founder of the Gaudiya Math and Mission, reflected on Bhakti Yoga, one of the four traditional paths of Yogic practices in Sanatan Dharma. Alongside Jnana and Karma Yoga, Bhakti Yoga constitutes part of Mokshya, the path of salvation in Hindu religion. In this context, Bhakti signifies complete surrender to the personal God. Siddhanta Sarasvati, a distinguished religious reformer in colonial Bengal, through his writings, aimed to raise awareness among the middle-class Bengali gentry, known as the Bhadraloks, about Gaudiya Vaishnavism, which is rooted in philosophical and spiritual pursuits such as dualism (Dvaita) and qualified dualism (Vishishtadvaita). In this framework, Krishna is considered the Supreme Lord, and devotees, while maintaining their identities, are interconnected by an inseparable bond of love and devotion. In our paper, we will highlight how Sarasvati defined Bhakti Yoga, through his literary experiences.

KEYWORDS. ***Bhakti, Gaudiya Vaishnavism, Colonial Bengal, Print Culture***

1. INTRODUCTION

This paper studies how Bimala Prasad Datta, later known as Bhaktisiddhanta Sarasvati Thakur, the founder of the Gaudiya Math and Mission, reflected on *Bhakti Yoga*, one of the four traditional paths of *Yogic* practices in *Sanatan Dharma*. Alongside *Jnana* and *Karma Yoga*, *Bhakti Yoga* forms part of *Mokshya*, the path of salvation in Hindu religion. In this context, *Bhakti* signifies complete surrender to the personal God.

Siddhanta Sarasvati, an eminent religious reformer in colonial Bengal, through his writings, aimed to raise awareness among the middle-class Bengali gentry about the depth of *Gaudiya* Vaishnavism. In this divine experience, Krishna is considered the Supreme Lord, and devotees, while maintaining their identities, are interconnected by an inseparable bond of love and devotion. This connection embodies *Bhakti* Yoga, which is the essence of *Gaudiya* Vaishnavism.

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He stated, "*One who chants the holy name awakens his spiritual form while the distinction between his material body and his spiritual self is gradually realized. When one attains self-realization and continues to chant the holy names, one will immediately perceive the transcendental form of the Supreme Lord, Krishna. It is the holy name that attracts the living entities to the transcendental form of Krishna by reviving their transcendental forms (Sridhama Mayapura, Nadia, 429 Gaura era).*"[1]

His understanding of *Bhakti Yoga*, which can be likened to the ideals of integrated humanism, transcending the caste structure of traditional Brahmin culture. In *the Bhakti Yoga* of *Gaudiya* Vaishnavism, there are no barriers between Krishna and his followers regarding caste, class, creed, or gender. In this process of self-surrender through the path of *Bhakti*, Sarasvati emphasized the significance of chanting the name of Hari (Krishna).

In the following segments of my paper, I will try to show how the idea of *Bhakti* became a focal point of his religious philosophy, emphasizing dualism in the name of Krishna consciousness. Additionally, I will contextualize his era within the realms of cultural history, the history of science, and the sociology of religion to elucidate his significance in the intellectual history of modern Bengal.

2. A BRIEF BIO -NOTE OF BIMALA PRASAD DATTA

We need to highlight the life and works of Bimala Prasad Datta who was also known as Bhaktisiddhanta Sarasvati Thakur (1874-1937), the founder of the *Gaudiya* Math and Mission (1901). A gifted scholar in Hindu astronomy, Bimala Prasad spent his time promoting national science in the vernacular before his initiation as a monk.

Siddhanta Saraswati was highly influenced and inspired by his father, Kedarnath Datta or Bhaktivinod Thakur, who led the revival of *Gaudiya* Vaishnavism in colonial Bengal. Kedarnath's vision and mission were to spread the message of Lord Caitanya amongst the *Bhadraloks* and help them to create an identity of their own based on dualism, surrender, devotion, and mercy.

Bimala Prasad followed in his father's footsteps to create a space for Gaudiya Vaishnavism as a refined religious culture capable of competing with other traditions of modern Bengal, as exemplified by figures like Rammohun Roy and Swami Vivekananda.[2]

3. BIMALA PRASAD DATTA (BHAKTI SIDDHANTA SARASVATI THAKUR) AS A RELIGIOUS REFORMER: KNOWING THE CHALLENGES AND CONSTRAINTS

Ferdinando Sardella (2013)[3] discussed how the creation of the *Bhadralok* class in colonial Bengal aimed to integrate Western ideas with traditional beliefs. They saw religion as a tool to achieve their socio-cultural and political goals, such as promoting social consciousness, nationalism, humanitarianism, rationalism, egalitarianism, and nondualism.

The reformers in modern Bengal were not keen on promoting Caitanya Vaishnavism, as they considered it socially unattractive for various reasons. First, they viewed it as disempowered and degraded due to its association with the masses and marginalized individuals, who were considered uneducated and uncultured by Victorian standards. Second, they were unwilling to accept the caste structure of *Gaudiya* Vaishnavism, which they saw as outdated and tied to

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aristocratic Brahminical culture. Lastly, they found the philosophy of the religion to be mystical and hypothetical.

Here Bimala Prasad, later Bhakti Siddhanta played a vital role and became instrumental for the 'recovery and propagation' of *Gaudiya* Vaishnavism. According to Sardella (2013), *"He did this primarily through the establishment of a pan-Indian religious institution, the publication of newspapers and journals, the printing and distribution of classical and medieval texts, and the writing of original commentaries."* [4]

In colonial Bengal, the tensions between modernization and Westernization must be explored through the philosophical pursuits of the *Bhadraloks*, who were often religious reformers influenced by the concepts of non-dualism and dualism. Additionally, scholars like David Kopf and Richard King have highlighted the challenges faced by the colonizers in positioning Hindus within the intellectual discourses of varied cultural legacies and influences in the Indian subcontinent. The *Bhadraloks* often sought models of modernity based on their native culture and beliefs rather than adhering strictly to the Western standards. Perhaps Bimala Prasad observed these changes and sought to assess the extent of the Bengal Renaissance by examining the response of the Bhadralok community, where his religious philosophy and scientific inquiry served as benchmarks.[5]

4. THE MODEL OF MODERNITY AND THE RELIGIOUS COMMUNICATION: LOCATING BIMALA PRASAD'S EXPERTISE IN ASTRONOMY AND THE SPREAD OF GAUDIYA VAISHNAVISM IN COLONIAL BENGAL:

Bimala Prasad or Siddhanta Sarasvati published multiple almanacs to spread knowledge about auspicious days in the *Gaudiya* Vaishnava community. He emphasized Hindu mathematical calculations to determine the exact time, or muhurta, for performing rituals. His efforts not only made devotees aware of the rich culture of the Bengali Vaishnavas but also sparked their interest in indigenous scientific traditions.

His passion for experiencing the cosmic world, coupled with his spiritual wisdom and scientific quest, revitalized interest in his sect, as people had started losing faith in Gaudiya Vaishnavism after Caitanya's death due to the incorporation of outcaste marginalized communities and the introduction of practices such as sexual liberation, which were disapproved by the Vaishnava Gurus.[6] His astronomical journals garnered a substantial number of subscribers all over India, which also served as evidence of his expertise and its utilization to promote Bengali Vaishnavism.

In his astronomical journals, *Jyotirvid* and *Brihaspati* Siddhanta Sarasvati highlighted how traditional Sanskrit texts on Hindu astronomy elucidate cosmic structure, planetary positions, and the ceaseless motion of stars, which he deemed unimpeachable. As he formulated his religious doctrines, he harnessed this scientific humanism to underscore the supreme soul, or the ultimate source of consciousness, which he identified as Lord Krishna. In the end, his quest for empirical knowledge guided him toward a deeper grasp of traditional Hindu philosophy's spiritual essence, following the path of Lord Caitanya, the founder of modern Vaishnavism. His spiritual comprehension of consciousness strongly influenced his revitalization of the Hindu faith, or *Sanatan Dharma.*

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His positivist outlook on transcendentalism, or consciousness, surfaces in his reflections on the *atman,* or soul, which he perceives as part of universal creation. Within *Vaisheshika Darshana*, a *Nyaya* school of thought, the doctrine of *Paramanuvada* proposes that the universe consists of *paramanu,* or atoms, which carry a dimension of consciousness and shape the *atman* (Kak, 2016).[7] This *atman* concept can be loosely compared to the Higgs boson (Wolf, 2015),[8] often dubbed the "God particle" in particle physics, known for its instability, neutrality, and swift decay—popularized by the 1993 publication *The God Particle: If the Universe Is the Answer, What Is the Question?* by Leon M. Lederman and Dick Teresi.[9]

To comprehend his religious philosophy rooted in the pursuit of scientific knowledge centered on the concepts of matter and consciousness, I would like to quote from his book, *Bange Samajikata* (Situating Society in Bengal,1821 *Shakabda*) where he stated (p.1), - *"Nature operates according to specific principles and rules. Physical entities each adhere to their own unique set of norms, allowing them to express their individuality. The distinctive qualities that differentiate one matter from another possess limitless potential. This uniqueness also contributes to a sense of dualism among these entities.*

The differences between two matters, arising from these same qualities, create a connection between them. Their shared characteristics foster a sense of similarity and unity. We typically refer to living beings as part of a "society." All matters are unique and endorse dualism, which can further evolve towards non-dualism. In this context, each matter is important and necessary. These matters are interconnected and follow the principles of causality."[10]

Siddhanta Sarasvati's quest for transcendental absolute truth was reflected in his advice to his followers who went aboard to spread Bengali Vaishnavism. In his own words, *"...proclaim to all the people that complete reliance on the Transcendental Absolute Truth is by far the highest form of freedom and one that is infinitely superior to the partial independent mastery over the distorted reflected entity in the shape of this mundane world..."* (*Harmonist* 30, no. 10 (April 1933): pp. 319. "My Advice", cited by Sardella (2012).[11]

5. PRINT CULTURE AND *BHAKTI*: UNDERSTANDING *BHAKTI* THROUGH THE WRITINGS OF SIDDHHANTA SARASVATI

I have already discussed the significant stages of Siddhanta Sarasvati's life as a religious reformer and an exponent of Hindu astral science. Now the question is, how can we contextualize *Bhakt*i, particularly its ultimate expression recognized as Krishna consciousness within the *Gaudiya* Vaishnava community, in relation to Siddhanta Sarasvati's transformation from a fervent explorer of Hindu science to a missionary advocating for peace and cultural pluralism? In the following sections,

I will attempt to address this question while providing a historical background to enhance the understanding of the socio-religious significance of the current discourse.

5.1 THE DEFINITION OF BHAKTI

Here I would like to quote Swami Vivekananda, who mentioned, "*Bhakti -Yoga is a real, genuine search after the Lord, a search beginning, continuing, and ending in Love. One single moment of the*

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madness of extreme love to God brings us eternal freedom. "Bhakti" says Nârada in his explanation of the Bhakti-aphorisms, "is intense love to God."- "When a man gets it, he loves all, hates none; he becomes satisfied for ever." – "This love cannot be reduced to any earthly benefit", because so long as worldly desires last, that kind of love does not come. "Bhakti is greater than Karma, greater than Yoga, because these are intended for an object in view, while Bhakti is its own fruition, its own means, and its own end." (*Bhakti -Yoga*, Advaita Ashrama, 1959). [12]

In *Addresses on The Vedânta Philosophy*, Vol. II, *Bhakti Yoga* (1896), Vivekananda sought to explain how we can transform our sensory love into a deeper, internal love for God. This process of evolution is referred to as *Bhakti*. Vivekananda cited the ancient Indian Sage Ramanuja, who saw Bhakti "…*as the preparations for getting …intense love*" (p.2) [13]

Here, I would also like to mention the views of Adi Sankaracarya, the founder of Vedanta philosophy. Although Sankara emphasized the importance of *jnana*, or self-knowledge, his conception of *Brahman*, or the supreme soul, was deeply rooted in complete surrender and devotion. In his *Bhaja Govindam*, Sankara expressed that pure love for God, or Govinda, enables the devotee to attain the highest happiness in life, which is associated with divine salvation under the guidance of the Supreme Soul. The word *Bhaja* "…*is the root word of the word* bhakti, which means "energetic mental service (Sribhashyam, p. 97).[14]

5.2. BHAKTI IN BHAGAVAD GITA AND ITS MANIFESTATIONS:UNDERSTANDING THE SPIRITUAL CORE

According to the *Bhagavad Gita*, the path of *Bhakti* is the greatest way of knowing God, which can be attained through one's experiences of *Karma* and *Dhyana* Yoga, respectively, as gradually one prepares oneself to be engulfed in the ocean of Bhakti. In verses such as 7.14, 10.11, 12.6–7, and 18.66, it is indicated that Krishna himself grants *Moksha* to his devotees in exchange for their pure love, or *Bhakti*, towards him. In chapter 12 of the Gita, Krishna refers to his devotee as *Priya*, meaning beloved, to reinforce their connection (Nicholas Sutton, *Bhagavad-Gita*, The Oxford Centre for Hindu Studies Guide, pp. 6-7) [15]

In the same chapter, verses 13 to 20 outline various qualities that a devotee should possess to attain *Mokshya*. A devotee should be a *yogin* who can control his senses. His mind and intellect should be absorbed in God for an identity that is not earthly, and then he will receive God's mercy in the form of divine love (Sutton, p.187). [16]

In the next section, I will discuss how *Bhakti* was placed in traditional Vaishnavism to understand Sarasvati Thakur's perceptions of *Bhakti, which* evolved through modern Vaishnavism.

5.3 ŚARAṆĀGATI YOGA IN TRADITIONAL VAISHNAVISM: BHAKTI AS SEEN BY RĀMĀNUJA

T. K. Sribhashyam (2012), in his *book From Devotion to Total Surrender, Śaraṇāgati Yoga,* tried to trace the history of Bhakti Yoga since the days of the Vedas. To understand how Bhakti played a central role in traditional Vaishnavism, he cited Rāmānuja**.** Rāmānuja worked on the Hindu philosophical concept of Viśiṣṭādvaita, which talks about qualified non-dualism. Viśiṣṭādvaita highlights the

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ontological understanding of God based on spiritual experiences. To know what is 'reality,' Rāmānuja tried to corroborate revelation, intuition, and reason to comprehend the divine (Sribhashyam, 2012, p. 196).[17]

J.A.B Van Buitenen, in his book, *Rāmānuja on the Bhagavadgītā* (1968), mentioned, "Rāmānuja was inspired by the writings of Yāmuna, *"…who was the first to introduce the āāconception of bhakti into the Vedānta… Rāmānuja, carrying on what Yāmuna had only just begun to do, attempted to give the Bhagavadgītā its legitimate place among the authoritative texts of the Vedānta (*Buitenen, pp.3 -4)".[18] In his religious philosophy, Rāmānuja incorporated Gītā's 'doctrine of salvation' (Buitenen, p. 8)[19] and emphasised on *śarīraśarīrībhāva, "the doctrine that God stands to the world of ātman and prakṛti in the relation of soul to body which forms its indissoluble attribute"* (Buitenen, p.7). [20]He embraced *Bhakti* in his understanding of the *Sanatan* as a means to invite humans to immerse themselves in divinity and receive the blessings of God (Sribhashyam, p.211).[21] For Rāmānuja, self-surrender (*prapatti*) to the almighty is the essence of *Bhakti-Yoga* (Sribhashyam, p.210).[22] His illustration of Bhakti as an emotional form of religious spirituality may have paved the way for the emergence of the Bhakti movement in northern India (Sribhashyam, p. 211). [23]

5.4 CAITANYA BHAKTI AND GAUDIYA VAISHNAVISM: THE MANIFESTATION OF A NEW SOCIAL ORDER

During the medieval period, the concept of Bhakti evolved into a more humane way of experiencing traditional beliefs. This approach was not strictly based on scripture; instead, it encouraged devotional spontaneity, emphasized cultural pluralism, and rejected the caste system. Here *Gaudiya* Vaishnavism, the religious movement initiated by Caitanya Mahaprabhu in the above-mentioned period in Bengal, marked a new beginning for the Vaishnava community with a revised or modified understanding of "*Parabrahman or the Absolute, the personal God under the name of Nārāyana*" (Sribhashyam, p. 194).[24] Therefore, *Bhakti* as a concept, in times of Caitanya, plays an important role not only in experiencing the Ultimate Reality but also in institutionalizing the Caitanya order and unifying the devotees with *Samkirtana* and *Mahotsavs.*[25]

Kedarnath Datta, the famous Gaudiya Vaishnava reformer of colonial Bengal and the father of Siddhanta Sarasvati once stated, "*We leave it to our readers to decide how to deal with Mahaprabhu. The vaishnavas have accepted him as the great Lord Krishna himself. Others have regarded Him as a bhakti- avatar… Those who are not prepared to go with them, may accept Nimai pandit as a noble and holy teacher. That is all we want our readers to believe* (Datta, *Sri Chaitanya Mahaprabhu* (1896), cited by Bhatia, 2017, p.5).[26]

5.5. SIDDHANTA SARASVATI AND BHAKI-YOGA: HIS QUEST FOR KNOWING KRISHNA CONSCIOUSNESS

I have previously discussed Bimala Prasad's life as a religious reformer, his challenges, and his efforts to integrate science and religion for a deeper understanding of the epistemological philosophy of modern Vaishnavism. Bengali intellectuals in colonial Bengal utilized print culture to attempt the reform of Gaudiya Vaishnavism. Here I would like to quote Santanu Dey (2020) who mentioned,

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"*One of the most vibrant forms through which the project of Bengali Vaishnava retrieval was carried out in the colonial period was periodical literature.1 Surveys of Vaishnava periodical collections in various archives and libraries of Bengal have revealed a substantial, if not pervasive, presence of Vaishnava periodicals in colonial times (Stewart and Basu 1983). The rapid spread of such periodicals across different parts of Bengal attests to both a high receptivity for Vaishnava ideas across the province and the formation of a Vaishnava community consciousness. The spread of vernacular literacy in Bengal had created a substantial community of 'silent' readers in the region by the second half of the nineteenth century, so much so that weekly and monthly religious periodicals could be published and commercially sustained*. (*The Journal of Hindu Studies*, 2020;13:30–53)[27]

For my paper, I have consulted the writings of Sarasvati Thakur in journals such as *The Harmonist* and *Nadia Prakash*, his book *Bange Samajikata*, and his letters to gain insight into his ideas on Krishna *Bhakti*. In a letter written in 1322 Bengali era, Sarasvati Thakur stated:

"If one does not worship Lord Hari, he will become a jnani or a karmi, pursuing other objects besides Krishna. Therefore, you should always call out the name of God by chanting the Hare Krishna maha-mantra. By loudly chanting the holy names of Krishna with a fixed number of rounds, all unwanted things will be vanquished and idleness, etc., will also go away. Even atheistic people who are envious of Hari will no longer ridicule you. Association with sastra is also good. Later on, association with devotees will be required for learning the process of bhajana. If the holy name of Hari is chanted without any offense, all perfection will be within your grip. Materialistic people cannot harm you in any way (Patramrita Nectar from letters, His Divine Grace Srila Bhaktisiddhanta Sarasvati Thakura Prabhupada, Isvara dasa, 2012).[28]

The rendition of *Bhakti* by Sarasvati, particularly for the devotees, was straightforward because he recognized that not everyone can understand the intricate theological concepts of Vedic religion. As a result, a simplification was necessary to expand its reach. In *Gaudiya* Vaishnavism, we find three types of *Bhakti: Sadhana Bhakti*, *Bhava Bhakti*, and *Prema Bhakti*.[29] Perhaps Sarasvati Thakur, like his father, Bhaktivinoda, emphasized *Sadhana Bhakti*, which does not follow the *Varna* rigidity of the Hindu hierarchical society and worships God by chanting his name (*Kirtana*) and getting his *darshan* without needing a lot of strict rituals.[30]

In another letter (Sri Mayapura, 15th Padmabha, 429 Gaura Era) Sarasvati Thakur wrote:

"I am very glad to know that you have understood that by chanting the holy names of Krishna with a prescribed number of rounds, one can achieve all auspiciousness. Do not stop the chanting of the holy name just because mundane thoughts keep surfacing in your mind while chanting. By constant chanting of the holy names of the Lord, all such useless thoughts will gradually go away. There is no need to be anxious. The result of chanting is not easily attainable in the beginning. By developing intense love for chanting the holy name of Krishna, all hankering for mundane thoughts will diminish" (Isvara dasa, 2012).[31]

The way he preached *Bhakti* was distinctive and clear, with his proficiency in languages being a significant factor. He successfully conveyed modern Vaishnava philosophy in a humble manner, which contributed to the religion's growing popularity. In both his scientific and religious communications, he emphasized the use of the vernacular and structured thoughts to promote a more realistic approach regarding the dissemination of knowledge. He discussed the concept of Krishna consciousness through

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the practice of chanting the name of Hari and taught the importance of self-surrender at the lotus feet of Him which is possible with the proper guidance from the Guru.

But *Bhakti* as a religious concept faced criticisms because of its less scriptural or theological experiences. As for example, Buitenen (1968) once stated, *"...bhakti, a completely unintellectual devotion, a continuous flow of emotional religiosity, ranging from the worship of idols to the most exalted mysticism of love for and surrender to the supreme Deity, and as such an essentially theistic spirituality, pervaded and animated the religious life of the Vaiṣṇavas, ever since it had found its superb expression in the poetry of the Gītā, and possibly even before.*(p. 6). [32]

Here, I would like to quote Sarasvati Thakur, who, through *Bhakti*, aimed to raise awareness within the Vaishnava community. This approach is indeed emotional but also emphasizes the significance of the Sampradaya from the standpoint of the sociology of religion. Siddhanta Sarasvati Thakur once stated,

"It is a devotee's business to remain in touch with the Absolute Truth twenty-four hours a day. If we associate with a living source, a Vaisnava, and hear hari-katha from him, we will certainly develop faith in the Supreme Lord and awaken our propensity to serve Him. If we wish to become devotees, we must associate with Vaisnavas. Associating with and fully surrendering to Vaisnavas removes our impediments. The Vaisnava's duty is to make his companions and dependents fearless, free from anxiety, happy, and to deliver all conditioned souls from Maya's hands. It is a Vaisnava's business to induce all materialistic living entities to become inclined toward the Supreme Lord. This is real compassion. Our spiritual success is guaranteed if we are honest in our dealings with Vaisnavas, hear attentively from them, and lead our lives according to their instructions. Only then can we be said to be taking advantage of their association." (*Amrta Vani: Nectar of Instructions of Immoratality,* Sripada Bhakti Mayukha Bhagavat Maharaja).[33]
In *The Harmonist*, Sarasvati Thakur mentioned, "*The Vaishnava is never a Brahman, Kshatriya, Vaisya or Sudra. The Vaishnava is not a common Hindu or a karmi. It is no doubt true that a Hindu who is born in a Brahman, Kshatriya, Vaishya, Sudra or Antyaja family or any other person whoever he may be is potentially fit to be a Vaishnava. As a matter of fact any jlva (being) whose spiritual nature has been awakened is fit to be a Vaishnava.* ("Vaishnavism and Hinduism", *The Harmonist*, August, 1927, 441 Chaitanya Era, Vol. XXV, No.3, p.51) [34]

The above-mentioned statements by Sarasvati Thakur help us understand his religious philosophy on Bhakti. In the first quotation, he emphasizes promoting modern Vaishnavism based on Sadhana, ultimately leading to self-surrender through specific spiritual practices. This fosters an environment of Krishna consciousness, illustrating how to unite with the Supreme Soul by following the path of self-purification. This concept is spiritual and encourages an intellectual understanding of the Divine. Similar ideas can be found in Christianity, where Jesus, as the Son of God, forms part of the Divine alongside the Father and the Holy Spirit. Therefore, the claim that Bhakti is unintellectual can be refuted, as it leads to a deeper relationship with God.

Secondly, from the perspective of the sociology of religion, the social anthropological approach to community studies is essential. This approach focuses on rituals and religious beliefs to define the scope of religious theory, which can also be applied in the context of Bhakti. Max Weber, in his book "Sociology of Religion," emphasized that the concept of belief encompasses three aspects: religion, unexplained magical realities, and the notion of performing duties. Therefore, we cannot ignore

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religion, as it is a crucial component in understanding the socio-cultural forces shaping various civilizations. Each religion should be examined sociologically, and thus, Bhakti should also be analysed in terms of its social components, which are neither unintellectual nor unacademic. Here I would like to quote Åke Sander who mentioned in his article, "Sociology of Religion" (2013):

"…*the sociological study of religion can offer valuable insights concerning how we can make peace with our diversity, and that it can provide helpful tools for solving the unique problems of our rather newly created multicultural, multiethnic and multi-religious world (*p. 16). [35]

In a letter, titled, "*The difference between karma, jnana, and so on",* which was written from Mayapur, Nadia (429 Gaura era), Siddhanta Sarasvati wrote about the various forms of *Vairagya* or the detachment from the materialistic world. In his words, *"When one accepts everything without the motive of personal attachment, but rather with the mentality of utilizing everything in the service of Lord Krishna in a pure state of mind; this is called yukta-vairagya, or proper renunciation. If one considers sastra, the deity form of the Lord, the chanting of the holy name, and the Vaisnavas to be mundane, one will engage in tuccha or phalgu-vairagya (false renunciation). This mentality should be rejected by devotees. The devotees of the Supreme Lord should only accept yukta-vairagya…" (Patramrita Nectar from letters*, Isvara dasa, 2012). [36]

To understand Siddhanta Sarasvati's inclination toward Bhakti, it is essential to grasp the concept of yukta-vairagya. Siddhanta Sarasvati was introduced to this idea by his father, Kedarnath Bhaktivinoda. According to Sardella (2013), *"... in the spirit of yukta vair ā gya , one's material body and mind, one's home and material objects, are no longer spiritual impediments. The only necessary ingredient is the internal determination and steadiness to serve God—and the strong desire to achieve success* (p. 205).[37] Both Bhaktivinoda and Bhaktisiddhanta aimed to cultivate a culture of devotion by encouraging religious spirituality among the grihi, or non-ascetic devotees. They promoted *yukta-vairagya,* which guides individuals to surrender at the lotus feet of Hari without rejecting the material world while maintaining a sense of indifference toward earthly desires.

Siddhnata Sarasvati's exploration of *Bhakti* has a gender- neutral approach which locates the position of women in the religious discourses on modern Vaishnavism. In one of his letters, he mentioned, "*Yogamaya is the internal spiritual potency of Lord Hari—this statement is found in the saptasati-candi section of Sri Markandeya Purana. Because of the presence of the Yogamaya sakti within Lord Hari, the male and female servants who are under the shelter of the five rasas are endowed with ingredients for their service to Lord Krishna…Bhakti-yogamaya, or prema-yogamaya is eternal. She is not a perishable object created by the external energy. It is bhakti-yogamaya who combines the pure spirit soul with the Supersoul in the form of Krishna"* (P*atramrita Nectar from letters*, Isvara dasa, 2012). [38]

Therefore, *Bhakti* may possess a feminine identity, but her presence is essential for reaching Lord Hari, demonstrating a unique firmness and objectivity. This highlights the significant role women played in the institutionalization of Caitanya Vaishnavism, exemplified by figures like Visnupriya and Jahnnava Devi, who embodied love, compassion, and divine mercy.

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6. CONCLUSION

This paper marks the beginning of my exploration into the religious philosophy of Bhaktisiddhanta Sarasvati, focusing on the concept of *Bhakti*. Although Siddhanta Sarasvati was a pivotal figure, his diverse academic contributions and social roles have not been thoroughly examined in scholarly work. Few have attempted to contextualize his influence in nineteenth- and twentieth-century Bengal, with Ferdinando Sardella being a notable exception. Another important account worth mentioning is *Śri Bhaktisiddhānta Vaibhava* by Bhakti Vikāsa Swami (2010).

There is a need for more academic research on Sarasvati Thakur that integrates religious studies with history, sociology, political science, literary theory, and scientific subjects like astronomy to grasp his broader significance. This paper aims to trace the roots of *Bhakti* and its evolution within Vaishnavism. It also highlights various stages in the life of Sarasvati Thakur as a religious reformer and advocate for science.

His practical approach to *Bhakti*, referred to as *yukta-vairagya*, helps us to understand how he propagated the idea of community consciousness, based on the core principles of Caitanya Vaishnavism. This philosophy promotes a non-ascetic and non-Brahmin spiritual and religious order, which was first introduced, practiced, and disseminated by his father, Bhaktivinoda.

Finally, the transformative power of chanting the name of Lord Hari, a fundamental aspect of *Sadhana Bhakti*, was first realized and enacted by this father-son duo in modern Bengal. This practice later became a primary objective behind the establishment of ISKCON by A.C. Bhaktivedanta Swami Prabhupada.

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