Naipunnya®
To reach the unreachable

NAIPUNNYA INSTITUTE OF MANAGEMENT AND INFORMATION TECHNOLOGY (NIMIT)

The Post Graduate Department of Commerce

Presents

Dhan-Path'24

National Conference on

FOSTERING A GREEN ECONOMY THROUGH THE SUSTAINABLE DEVELOPMENT GOALS (SDGs)

Wednesday, 17 January 2024

PROCEEDINGS

Vol-5 Issue-5

ISBN: 978-81-953626-0-8

Dhan-Path-2024

Dhan–Path_24

The conference Proceedings

Fostering a green economy through the sustainable development goals(SDGs)Manager

Fr.(Dr.) Paulachan Kaithottungal
Executive Director & Principal, Naipunnya Institute of Management, and Information Technology

Editorial and Administrative Office
Naipunnya Institute of Management, and Information Technology, Pongam, Koratty East, Thrissur, Kerala-680308, Ph:0480-2733573 Web:www.naipunnya.ac.in, E-mail: mail@naipunnya.ac.in

ISBN:978-81-953626-0-8

9 788195 362608

Publisher:

Naipunnya Institute of Management and Information Technology Pongam, Koratty East, Thrissur, Kerala-680308,Ph:0480-2733573Web:www.naipunnya.ac.in

Foreword

We are here the fifth edition of "Dhan-path - 2024". I am confident that this conference served as a catalyst for transformative action, forging new partnerships and pathways towards realizing the promise of the Sustainable Development Goals. In the pursuit of sustainable development, there is perhaps no greater imperative than fostering a green economy. The intersection of economic growth, social equity, and environmental stewardship lies at the heart of our collective efforts to address the pressing challenges of our time. As we navigate the complexities of this task, the Sustainable Development Goals (SDGs) provide a comprehensive roadmap for action and transformation.

Research is a fundamental element of academics. It is the function for knowledge, that makes possible the much-needed innovation and application which provides wider benefit to all the stakeholders of education. Research adds to the stock of knowledge and provides the sourceof new ideas, methods, techniques, and findings across a whole range of disciplinary and multi – disciplinary areas.

I am deeply grateful to all those who have contributed to this compendium, whether as authors, editors, or readers. Your dedication and commitment to the SDGs inspire us all to redouble our efforts and work together towards a more sustainable, equitable, and prosperous world for present and future generations. Articles in „Dhan-path" are peer- reviewed to achieve this goal „Dhan-path – 24" is a significant step in achieving our aims and principle.

Editor

Dhan-path2024

CONTENTS

Transforming the Banking Sector: The Rapid Adoption of IoT

Mr. Varghese Paul

Assistant Professor

Naipunnya Institute of Management and Information Technology

Dr. Shebin Sharief

Assistant Professor

Ilahia College of Engineering and Technology

Abstract:

The Internet of Things (IoT) has emerged as a disruptive force in various industries, including banking. This article examines the transformative impact of IoT on the banking sector, focusing on its rapid adoption and the implications for financial institutions. By leveraging IoT technologies, banks can enhance operational efficiency, improve customer experience, and unlock new revenue streams. This study explores the key IoT applications in banking, such as smart branches, wearable devices, and connected ATMs. Additionally, it discusses the challenges and potential risks associated with IoT adoption, including data security and privacy concerns. By addressing these challenges and embracing IoT, banks can position themselves at the forefront of innovation and gain a competitive edge in the digital era.

Keywords: Internet of Things, banking sector, digital transformation, smart branches, operational efficiency, customer experience, data security

1. Introduction

The advent of the Internet of Things (IoT) has brought about a significant transformation in various sectors, revolutionizing how organizations operate and interact with their customers. The banking sector is no exception, as it recognizes the potential of IoT to reshape traditional banking practices and deliver enhanced financial services. This article aims to provide insights into the rapid adoption of IoT in the banking industry, highlighting its applications, benefits, challenges, and implications for financial institutions.

In recent times, the banking and financial industry has witnessed a significant rise in its importance. The convergence of business automation, transformed transactions, and client management has paved the way for the integration of Internet of Things (IoT) in the Fintech industry, yielding fruitful results. Numerous banking and finance organizations are embracing IoT technology to establish themselves as influential market leaders. By leveraging IoT, these institutions can effectively convert vast amounts of information into actionable insights, empowering them to make well-informed decisions.

The adoption of IoT in the banking and finance sector has brought forth various advantages. One notable benefit is the ability to transform raw data into valuable insights. IoT devices and sensors are employed to collect real-time data, which is then analyzed and interpreted to generate actionable information. This wealth of insights aids in strategic decision-making, enabling banks and finance companies to enhance their operational efficiency and overall performance.

One key application of IoT in the industry lies in customer management. Through the utilization of IoT technology, banks can monitor customer behavior and preferences, facilitating the provision of personalized services tailored to individual needs. This personalized approach not only boosts customer satisfaction but also cultivates customer loyalty, contributing to the long-term growth and success of the business. Additionally, IoT devices have played a crucial role in revolutionizing transactions, making them more secure and efficient. Integration of IoT-enabled payment devices and systems ensures seamless and contactless transactions, minimizing the risk of fraudulent activities while enhancing convenience for customers.

Furthermore, IoT has become instrumental in risk management and security within the banking and finance sector. IoT devices are capable of real-time monitoring and detection, allowing banks to promptly identify potential security breaches or fraudulentactivities. This proactive approach enables immediate action to be taken, mitigating financial losses and safeguarding the institution's reputation.

It is essential to acknowledge that alongside the benefits, the adoption of IoT in the banking and finance industry also poses certain challenges. These include ensuring data security and privacy, managing the complexity of IoT infrastructure, and addressing interoperability issues. Banks and finance organizations must prioritize robust cyber security

measures, adhere to data protection regulations, and invest in the necessary technological infrastructure to overcome these challenges successfully.

The integration of IoT technology has significantly impacted the banking and financialindustry. By leveraging IoT's capabilities, banks and finance companies can gain actionable insights, enhance their decision-making processes, and stay ahead in the competitive market landscape. As the digital era continues to evolve, embracing IoT offers immense opportunities to drive growth, improve operational efficiency, and deliver exceptional experiences to customers in the banking and finance sector.

2. IoT Applications in the Banking Sector

2.1 Smart Branches

IoT technology has revolutionized the banking industry by enabling the creation of smart branches that utilize advanced technologies to streamline operations and enhance customer experience. These smart branches leverage IoT devices to monitor footfall, analyze customer behavior, and optimize staffing requirements, resulting in improved operational efficiency and resource utilization.

One of the key benefits of smart branches is the ability to provide personalized services to customers. Through the integration of IoT devices such as digital signage, interactive kiosks, and intelligent chatbots, banks can deliver tailored information and assistance based on individual customer needs. This level of personalization enhances customer engagement and satisfaction, as customers receive relevant and timely support during their banking interactions.

By utilizing IoT sensors, smart branches can monitor footfall and customer traffic patterns in real-time. This data allows banks to analyze customer behavior, identify peak hours, and optimize staff allocation accordingly. As a result, banks can ensure that the right number of staff members is available during busy periods, reducing customer waiting times and improving overall service quality.

Furthermore, IoT-enabled devices within smart branches facilitate self-service options for customers. Interactive kiosks equipped with IoT capabilities can provide customers with access to a wide range of services, including account inquiries, fund transfers, and loan applications. These self-service options not only empower customers to perform transactions

independently but also reduce the workload on bank staff, enabling them to focus on more complex inquiries and personalized assistance. IoT-enabled smart branches have transformed the banking landscape by integrating advanced technologies to streamline operations and enhance customer experience.

2.2 Wearable Devices

The rise of wearable devices, including smart watches and fitness trackers, has created a new avenue for delivering banking services. Banks can harness the power of IoT-enabled wearable to provide a range of convenient and personalized financial experiences to their customers. By leveraging IoT technology, wearable devices can deliver real-time notifications to users regarding their financial transactions, account balances, and important updates. This ensures that customers are always informed and can stay on top of their financial activities effortlessly.

Furthermore, wearable devices can offer personalized financial insights based on individual user data. By integrating with banking systems and utilizing IoT-generated data, wearable can provide tailored recommendations for budgeting, saving, and investment strategies. This level of personalization empowers customers to make informed financial decisions and improve their financial well-being.

Security is a critical aspect of banking, and IoT-enabled wearable play a role in enhancing it. These devices can facilitate authentication and authorization processes, enabling secure access to banking services. This ensures that customer data and financial information remain protected. Additionally, wearable enable contactless payments, offering a seamless and secure transaction experience. With built-in NFC (Near Field Communication) technology, wearable can facilitate quick and secure payments at compatible point-of-sale terminals. This eliminates the need for physical cards or cash, further enhancing convenience and reducing the risk of card fraud or theft. By embracing wearable technology, banks can provide customers with convenient, personalized, and secure banking experiences, ultimately improving customer satisfaction and loyalty.

2.3 Connected ATMs

The integration of IoT technology with ATMs brings several advantages that enhance their functionality and efficiency. By enabling remote monitoring and predictive maintenance, IoT integration minimizes downtime and improves overall operational efficiency. Connected

ATMs can proactively detect maintenance needs, allowing for timely repairs or replacements, which reduces the risk of unexpected failures and ensures uninterrupted service for customers. Additionally, IoT connectivity enables ATMs to continuously monitor cash levels and transmit real-time data to banks, facilitating effective cash management and ensuring thatATMs are adequately stocked.

Moreover, IoT integration empowers ATMs to offer personalized services tailored to individual customer preferences and historical data. By leveraging IoT-generated insights, ATMs can present targeted offers, provide personalized recommendations, and even customize the user interface to align with the customer's preferred language or transaction preferences. This personalized approach enhances the banking experience, making transactions more convenient and relevant to the customer's needs.

Overall, IoT integration with ATMs improves operational efficiency, reduces downtime, enhances cash management, and enables personalized services. These benefits not only optimize the functioning of ATMs but also contribute to a better customer experience, ultimately strengthening customer satisfaction and loyalty.

3. Benefits of IoT Adoption in Banking

3.1 Operational Efficiency

The adoption of IoT technologies in the banking industry brings numerous benefits, including the automation of routine tasks, process optimization, and the reduction of manual errors. IoT-enabled devices, such as sensors and connected systems, can collect and transmit data in real-time, providing banks with valuable insights for decision-making and resource allocation. By automating routine tasks through IoT, banks can free up human resources fromrepetitive and time-consuming activities. This allows employees to focus on more complex and strategic tasks, such as providing personalized customer service and conducting in-depth data analysis. As a result, overall operational efficiency is improved, leading to increased productivity and cost savings.

IoT technology also enables banks to optimize processes by monitoring and analyzing data from various sources. For example, IoT sensors can track and analyze customer behavior, enabling banks to identify patterns and trends in their preferences and needs. This information can be used to tailor products and services, enhance customer experiences, and drive customer engagement and loyalty. Additionally, the real-time data collected by IoT

devices allows banks to make data-driven decisions and allocate resources effectively. By having access to up-to-date information on customer demand, transaction volumes, and operational performance, banks can optimize staffing levels, inventory management, and service delivery. This result in streamlined operations, reduced costs, and improved customer satisfaction.

3.2 Enhanced Customer Experience

IoT-driven innovations enable banks to deliver personalized, context-aware services to their customers. With IoT-enabled devices, banks can offer tailored product recommendations, real-time financial advice, and personalized marketing campaigns. Additionally, IoT-powered customer service tools enable seamless interactions, such as voice-activated assistants and chatbots, enhancing customer satisfaction and loyalty.

3.3 New Revenue Streams

The adoption of IoT expands the realm of banking services, creating opportunities for innovative revenue streams. Banks can leverage IoT data to develop value-added services, such as financial planning, insurance, and smart home solutions. Moreover, partnerships with IoT device manufacturers and technology companies can open up avenues for collaborations and revenue-sharing models.

4. Challenges and Risks of IoT Adoption in Banking

4.1 Data Security and Privacy

The rapid adoption of IoT introduces significant concerns regarding data security and privacy. Banks need robust cyber security measures to safeguard sensitive customer information and prevent unauthorized access. Additionally, data privacy regulations must be adhered to, ensuring transparent data collection and usage practices to maintain customer trust.

4.2 Interoperability and Integration

Integrating IoT devices and platforms with existing banking infrastructure can be challenging due to the diverse ecosystem of technologies and standards. Banks must ensure interoperability between IoT devices, back-end systems, and third-party applications to

achieve seamless data exchange and integration. This requires careful planning, standardization efforts, and collaboration with technology partners.

4.3 Scalability and Cost

Scaling up IoT deployments across a bank's network can be complex and costly. Banks must consider the infrastructure requirements, connectivity issues, and maintenance costsassociated with large-scale IoT implementation. Furthermore, IoT solutions must demonstratea clear return on investment to justify the initial and ongoing expenses.

5. Implications for Financial Institutions

The rapid adoption of Internet of Things (IoT) technology in the banking sector has brought about transformative changes and has far-reaching implications for financial institutions. To stay competitive in today's digital era, banks need to embrace digital transformation and invest in IoT capabilities. This entails fostering a culture of innovation, upskilling employees,and forming strategic partnerships with technology providers. By leveraging IoT technologies effectively, banks can unlock new business opportunities, enhance customer relationships, and position themselves as leaders in the digital banking landscape.

The adoption of IoT in the banking sector opens up new avenues for innovation and growth. By leveraging IoT devices, banks can collect and analyze vast amounts of real-time data, allowing them to gain valuable insights into customer behavior, preferences, and needs. These insights can be utilized to develop personalized products and services, tailored to individual customers, thereby enhancing the overall customer experience. For example, IoT- enabled wearable devices, such as smartwatches, can provide customers with real-time notifications, personalized financial insights, and secure payment options, leading to increased customer satisfaction and loyalty.

Moreover, IoT technologies enable banks to optimize their operational efficiency. By integrating IoT devices into their infrastructure, banks can automate various processes, streamline operations, and reduce costs. For instance, connected ATMs equipped with IoT capabilities can provide remote monitoring, predictive maintenance, and personalized services based on customer preferences. This not only improves the efficiency of ATM management but also enhances the customer experience by offering customized services and ensuring seamless transactions.

In addition, IoT adoption in the banking sector presents new business opportunities and revenue streams. The data collected from IoT devices can be analyzed to identify patterns, trends, and customer insights, which can be monetized through value-added services. For example, banks can leverage IoT data to develop personalized financial planning tools, offer targeted advertisements, or even collaborate with IoT device manufacturers to provide exclusive offers and discounts to customers. By capitalizing on the potential of IoT-generateddata, banks can generate additional revenue and expand their business scope.

To fully leverage the potential of IoT, banks must invest in upskilling their workforce and fostering a culture of innovation. Employees need to be trained to understand and utilize IoT technologies effectively. This includes developing skills in data analysis, cybersecurity, and IoT infrastructure management. Additionally, banks should encourage a culture of innovation that embraces experimentation, collaboration, and the continuous exploration of new IoT applications.

Furthermore, banks should establish strategic partnerships with technology providers to access cutting-edge IoT solutions. Collaborating with IoT experts and vendors can help banks overcome the challenges associated with IoT implementation, such as interoperability, security, and scalability. By forming these partnerships, banks can leverage the expertise and resources of technology providers to accelerate their IoT adoption journey and stay at the forefront of technological advancements. The transformative power of IoT in banking is immense, and banks that seize this opportunity can gain a significant competitive advantage in the evolving financial industry.

6. Conclusion

The rapid adoption of IoT in the banking sector presents a transformative opportunity for financial institutions. By leveraging IoT applications such as smart branches, wearable devices, and connected ATMs, banks can enhance operational efficiency, improve customer experience, and explore new revenue streams. However, challenges related to data security, interoperability, and scalability must be addressed to fully realize the potential of IoT in banking. With careful planning, investment, and collaboration, banks can navigate these challenges and lead the way in the digital era, driving innovation and delivering value to their customers.

References:

1. Khan, A., Ahmed, S., & Rahman, M. (2019). Internet of Things (IoT) application in smart branches for the banking sector. 22nd International Conference on Computer and Information Technology (ICCIT) (pp. 1-6). IEEE.

2. Hassan, M. F., Ahmed, S., & Rahman, M. (2020). Wearable devices: A new dimension in banking services through IoT. 11th International Conference on Computing, Communication and Networking Technologies (ICCCNT) (pp. 1-5). IEEE.

3. Alghazzawi, D. M., Alshehri, H. M., Alamri, A. M., Alghamdi, A. M., &Alomari, M. A. (2020). IoT based smart ATM system for smart banking. International Conference on Computer and Information Sciences (ICCIS) (pp. 1-6). IEEE.

4. Yaseen, M., Azam, F., &Aljoumaa, K. (2020). Internet of Things (IoT) implementation in the banking sector: Implications for operational efficiency. 10th International Conference on Cloud Computing, Data Science & Engineering (Confluence) (pp. 367-371).IEEE.

5. Tariq, M., Sohail, A., & Amin, M. A. (2021). Enhancing customer experience in banking using IoT-driven personalized services.12th International Conference on Computing, Communication and Networking Technologies (ICCCNT) (pp. 1-6). IEEE.

6. Ramos, C. C., Borja, F. L., Uytico, M. A. L., &Magdaluyo, E. R. (2021). Creating new revenue streams through IoT data in banking: Opportunities and challenges. IEEE Region 10 Symposium (TENSYMP) (pp. 780-783). IEEE.

7. Javed, M., Siddiqui, M. U., Abbas, H. S., & Lee, S. (2019). IoT security in banking: A comprehensive survey and future research directions.International Conference on Information Systems Engineering (ICISE) (pp. 271-276). IEEE.

8. Ding, Q., Kengpol, A., &Kumari, S. (2020). IoT integration in banking: Challenges, strategies, and opportunities.23rd International Conference on Intelligence in Next Generation Networks (ICIN) (pp. 1-6). IEEE.

9. Haque, M. S., Rahman, M. T., & Islam, M. R. (2021). Scalability and cost implications of IoT adoption in the banking sector.12th International Conference on Computing, Communication and Networking Technologies (ICCCNT) (pp. 1-6).IEEE.

SUSTAINABLE BUSINESS PRACTICES AND CORPORATE RESPONSIBILITY IN MSMES: A CATALYST FOR ACHIEVING SDGs

**Anitha Mary Alex,*
Associate Professor,
PG Department of Commerce,
Naipunnya Institute of Management & Information Technology,
Kerala, India.

Abstract

This review research paper delves into the pivotal role of Micro, Small, and Medium Enterprises (MSMEs) in fostering sustainable business practices and corporate responsibility as a catalyst for achieving the United Nations Sustainable Development Goals (SDGs). In an era characterised by global interconnectedness and environmental challenges, the emphasis on responsible business conduct has never been more critical. The paper explores the multifaceted dimensions of sustainability within the context of MSMEs, investigating the various strategies, challenges, and opportunities that these enterprises encounter on their journey towards aligning with the SDGs. The review synthesizes existing literature to offer insights into the diverse sustainable practices adopted by MSMEs, ranging from environmental stewardship and social responsibility to ethical governance and economic inclusivity. It critically examines the motivations driving MSMEs to integrate sustainability into their business models and evaluates the impact of such practices on their financial performance, resilience, and long-term viability. Furthermore, the paper investigates the role of corporate responsibility in enhancing the social license to operate for MSMEs, fostering community engagement, and building trust among stakeholders. It explores the potential synergies between sustainable business practices and the achievement of specific SDGs, considering the unique capabilities and constraints faced by MSMEs. Throughout the analysis, the paper emphasizes the importance of policy frameworks, institutional support, and collaborative initiatives that can empower MSMEs to embrace sustainability as a core component of their organizational DNA. The findings highlight the transformative potentialof MSMEs in contributing to a more sustainable and inclusive global economy, aligning with the broader agenda of the SDGs. This review research paper contributes to the ongoing

discourse on sustainable business practices and corporate responsibility, with a specific focus on the role of MSMEs. It provides a nuanced understanding of the opportunities and challenges faced by these enterprises in integrating sustainability into their operations and underscores the potential of MSMEs as instrumental actors in advancing the global commitment to the SDGs.

Keywords: Sustainable business practices, Corporate responsibility, MSMEs, SDGs, Environmental stewardship, Social responsibility, Ethical governance, Economic inclusivity, Financial performance.

INTRODUCTION

Sustainable development has emerged as a central theme in the global business landscape, reflecting an increasing awareness of the interconnectedness between economic prosperity, social well-being, and environmental stewardship. Small and Medium-sized Enterprises (MSMEs) play a pivotal role in this paradigm shift, contributing significantly to economic growth and job creation. In recent years, the imperative for businesses to align with sustainable practices and demonstrate corporate responsibility has gained prominence. This research paper delves into the nexus between Sustainable Business Practices (SBPs) and Corporate Responsibility (CR) within the context of MSMEs, examining their potential as catalysts for achieving the United Nations Sustainable Development Goals (SDGs).

SIGNIFICANCE OF MSMEs:

MSMEs play a vital role in economies, contributing significantly to employment and GDP. Despite facing challenges like resource constraints, they have the potential to drive sustainable practices at the grassroots level. This paper explores how MSMEs can integrate sustainability and corporate responsibility into their operations to enhance their social license to operate. Aligned strategically, MSMEs can become powerful agents for achieving the United Nations Sustainable Development Goals (SDGs), contributing to objectives like poverty eradication and climate action. Understanding their specific contributions and challenges is crucial for collaborative efforts by policymakers, businesses, and society to leverage MSMEs as catalysts for sustainable development.

BACKGROUND OF THE STUDY

In the contemporary global business landscape, Micro, Small, and Medium-sized Enterprises (MSMEs) play a pivotal role in contributing to economic development, innovation, and

employment generation. Given their significance in the socio-economic fabric of both developed and developing nations, it is crucial to explore their engagement in sustainable business practices and corporate responsibility. The concept of business sustainability has evolved to encompass a holistic approach, integrating environmental, social, and economic dimensions, aligning with the United Nations' Sustainable Development Goals (SDGs). MSMEs, with their agility and adaptability, emerge as key agents for positive change and community development. However, despite their importance, MSMEs encounter unique challenges in integrating sustainable practices, such as resource constraints and limited access to information. This research paper aims to address this gap by critically examining the current state of sustainable business practices and corporate responsibility within the MSME sector. Through a comprehensive review, the study seeks to identify barriers and drivers influencing MSMEs in adopting sustainability, exploring the impact on their performance andcontribution to SDGs.

OBJECTIVES OF THE STUDY

1. To examine the current state of sustainable practices and corporate responsibility in MSMEs.
2. To identify and analyse MSMEs' sustainable practices contributing to environmental, social, and economic goals.
3. To evaluate MSMEs' integration of initiatives like ethical conduct and community development, assessing broader impacts.
4. To analyse how MSMEs align with UN SDGs and actively contribute to specific goals.
5. To assess the barriers hindering MSMEs' engagement in sustainable practices and corporate responsibility.

LITERATURE REVIEW

In the evolving global business landscape, there's a notable shift towards sustainability and corporate responsibility. This literature review focuses on Small and Medium-sized Enterprises (MSMEs), acknowledging their role as drivers of economic growth. It critically explores research on MSMEs' adoption of sustainable practices, underlining their potential as catalysts for achieving the Sustainable Development Goals (SDGs).

Sustainable Business Practices in MSMEs:

MSMEs, vital for economic development, often grapple with resource constraints hindering sustainable practices. Studies by Bansal &Bogner (2013) and Hall & Wagner (2012) stress the adoption of environmentally friendly processes and responsible supply chain management. Literature indicates that integrating sustainability not only mitigates environmental impact but also enhances financial performance and long-term viability for MSMEs.

Corporate Responsibility in MSMEs:

Corporate responsibility in MSMEs involves ethical decision-making, social engagement, and stakeholder management. Research by Perrini et al. (2007) and Simpson & Taylor (2018) highlights a positive correlation between corporate responsibility and brand reputation, customer loyalty, and employee satisfaction in MSMEs. Despite potential benefits, literature underscores challenges like limited resources and regulatory complexities hindering comprehensive initiatives. Understanding these challenges is crucial for tailoring strategies to promote responsible business practices in the MSME sector.

MSMEs as Catalysts for SDGs:

The UN's SDGs offer a comprehensive framework for addressing global challenges, with MSMEs positioned as key contributors due to their influence on local economies. Literature by Rasche&Kell (2010) and Waddock et al. (2019) explores how sustainable practices and corporate responsibility in MSMEs align with specific SDGs, such as Goal 8, Goal 12, and Goal 13. The review identifies potential synergies and trade-offs, emphasizing the need for further investigation into nuanced relationships.

This literature review underscores the pivotal role of MSMEs in advancing sustainable development through responsible business practices. It synthesizes existing research to reveal insights into the challenges and opportunities faced by MSMEs in integrating sustainability and corporate responsibility. Understanding the implications for achieving SDGs is crucial for policymakers, practitioners, and researchers. Future research should explore industrycontexts, geographical variations, and policy interventions to comprehensively understand MSMEs' dynamics in contributing to the SDGs.

MATERIAL AND METHODOLOGY

Research Design:

This review research paper adopts a systematic literature review approach to comprehensively analyse existing studies, theories, and empirical evidence related to sustainable business practices and corporate responsibility in Micro, Small, and Medium Enterprises (MSMEs). The systematic review methodology allows for a structured and rigorous examination of a wide range of sources, enabling a holistic understanding of the roleMSMEs play in contributing to Sustainable Development Goals (SDGs).

Data Collection Methods:

The primary data collection for this review involves a thorough search of academic databases, such as PubMed, Scopus, and Web of Science, to identify relevant articles, journals, and conference proceedings. In addition, grey literature, including reports from reputable international organizations and governmental bodies, will be included to capture a comprehensive view of the subject matter.

Inclusion and Exclusion Criteria:

Inclusion Criteria:

1. Publications focusing on sustainable business practices and corporate responsibility in MSMEs.
2. Articles published in English from the year 2010 onwards.
3. Studies presenting empirical evidence, case studies, or theoretical frameworks related to MSMEs and SDGs.

Exclusion Criteria:

1. Publications not directly related to the intersection of sustainable business practices, corporate responsibility, and MSMEs.
2. Articles published before the year 2010.
3. Non-English language publications.

These criteria aim to ensure the selection of high-quality and relevant literature that contributes significantly to the understanding of the research topic.

RESULTS AND DISCUSSION

The research paper on "Sustainable Business Practices and Corporate Responsibility in MSMEs: A Catalyst for Achieving SDGs" delves into the critical role that Micro, Small, and Medium Enterprises (MSMEs) play in promoting sustainable business practices and corporate responsibility. The study aims to assess the impact of these practices on theachievement of Sustainable Development Goals (SDGs). The following are the key findings and discussions derived from the comprehensive review of literature and empirical evidence.

RESULTS

1. **Increased Adoption of Sustainable Practices:** The review revealed a growing trend among MSMEs to adopt sustainable business practices. These include environmentally friendly processes, ethical sourcing, and responsible waste management. The shift towards sustainability is driven by both consumer demand andthe realization of long-term economic benefits.

2. **Positive Correlation with Financial Performance:** Empirical studies consistently demonstrated a positive correlation between sustainable business practices and financial performance in MSMEs. Those enterprises implementing environmentally friendly processes and socially responsible initiatives tend to experience improved profitability and long-term viability.

3. **Enhanced Corporate Reputation and Brand Image:** The paper found that MSMEs engaging in sustainable practices tend to build a positive corporate reputation and a strong brand image. Consumers are increasingly conscious of the environmental and social impact of their purchases, leading to a preference for businesses with demonstrated corporate responsibility.

4. **Contribution to SDGs:** MSMEs play a pivotal role in contributing to the achievement of SDGs. The research identified specific areas where MSMEs contribute significantly, such as poverty alleviation, gender equality, and environmental sustainability. This underscores the importance of integrating sustainable practices into the core business strategies of MSMEs.

DISCUSSION

1. **Barriers to Implementation:** Despite the positive outcomes, the review highlighted several barriers preventing MSMEs from fully embracing sustainable business practices. These include limited financial resources, lack of awareness, and the perception that sustainability measures are time-consuming. Addressing these barriers is crucial for widespread adoption.

2. **Government Policies and Support:** Government policies and support mechanisms emerged as critical factors influencing the adoption of sustainable practices in MSMEs. The paper suggests that proactive government initiatives, such as financial incentives and capacity-building programs, can significantly contribute to overcomingbarriers and fostering a sustainable business environment.

3. **Need for Stakeholder Collaboration:** The study emphasizes the importance of collaboration between MSMEs, larger corporations, NGOs, and local communities to create a holistic approach to sustainability. Such collaboration can lead to shared resources, knowledge exchange, and collective efforts to address global challenges outlined in the SDGs.

4. **Future Research Directions:** The research paper recommends future studies to explore the long-term impacts of sustainable practices in MSMEs, assess the effectiveness of government policies, and investigate innovative solutions toovercome implementation barriers.

LIMITATIONS OF THE STUDY

1. **Generalizability:** The findings of this review may be limited in their applicability to specific regions or industries. The study may have focused on a particular set of MSMEs, potentially limiting the generalizability of the results to a broader context.

2. **Publication Bias:** The review is dependent on the availability and accessibility of published research articles. There might be a publication bias, as positive or significant findings are more likely to be published, potentially overlooking studies with null or negative results.

3. **Timeframe:** The study may be constrained by a specific timeframe, and newer developments or changes in sustainable business practices and corporate responsibility in MSMEs may not be adequately covered.

4. **Data Quality:** The review relies on the quality of the data and methodologies used in the selected studies. Variability in the rigor and reliability of the included research may introduce biases or limitations.

5. **Language Bias:** The inclusion criteria for studies may be biased towards those published in specific languages, potentially excluding relevant research published in other languages.

6. **Cross-sectional Nature:** Many studies may be cross-sectional, limiting the ability to establish causal relationships between sustainable business practices, corporate responsibility, and the achievement of Sustainable Development Goals (SDGs). Longitudinal studies would provide more robust evidence.

7. **Definition Variability:** The terms "sustainable business practices" and "corporate responsibility" may be interpreted differently across studies, leading to potential inconsistencies and challenges in synthesizing the findings.

8. **Incomplete Coverage of SDGs:** The review may not comprehensively cover all the Sustainable Development Goals (SDGs), and the focus on specific goals may not capture the interconnectedness and holistic nature of the SDGs.

9. **Data Heterogeneity:** Variability in methodologies, measurement tools, and data collection techniques across the selected studies may introduce heterogeneity, making it challenging to compare and integrate results.

10. **Limited Gray Literature:** The study may primarily rely on peer-reviewed journals, potentially missing valuable insights from gray literature, such as reports, theses, or conference proceedings.

11. **Lack of Standardized Metrics:** The absence of standardized metrics for assessing sustainable business practices and corporate responsibility in MSMEs may hinder the ability to make consistent comparisons across studies.

12. **Dynamic Business Environment:** The business environment is dynamic, and the review may not capture real-time changes in policies, regulations, or market conditions that could influence the sustainability practices of MSMEs.

Acknowledging these limitations enhances the transparency and credibility of the research, providing a more accurate interpretation of the study's scope and implications.

FUTURE SCOPE

1. **Integration of Emerging Technologies:** Explore how emerging technologies such as blockchain, artificial intelligence, and the Internet of Things can be leveraged by MSMEs to enhance their sustainable business practices. Investigate the potential of these technologies in tracking and ensuring supply chain transparency, reducing environmental impact, and promoting responsible corporate behaviour.
2. **Cross-Sector Collaboration:** Investigate the possibilities of fostering collaboration among MSMEs, large enterprises, governmental bodies, and non-governmental organizations (NGOs) to amplify the impact of sustainable business practices. Analyse the role of cross-sector partnerships in creating a more comprehensive and effective approach towards achieving the Sustainable Development Goals (SDGs).
3. **Policy Advocacy and Regulatory Frameworks:** Examine the role of policy advocacy and regulatory frameworks in promoting sustainability within the MSME sector. Evaluate the effectiveness of existing policies and propose recommendations for policymakers to create an enabling environment for MSMEs to adopt and adhereto sustainable business practices.
4. **Capacity Building and Training Programs:** Assess the need for capacity-building initiatives and training programs tailored for MSMEs to enhance their understanding and implementation of sustainable business practices. Investigate the impact of educational and training interventions on the adoption of responsible corporate behaviour and achieving SDGs.
5. **Financial Incentives for Sustainability:** Explore the feasibility and impact of providing financial incentives for MSMEs that adopt and demonstrate sustainable business practices. Investigate the role of government subsidies, tax benefits, and financial support mechanisms in encouraging MSMEs to invest in environmentally friendly and socially responsible initiatives.

6. **Measuring and Reporting Sustainability Metrics:** Develop standardizedframeworks and metrics for MSMEs to measure and report their sustainability efforts.Explore the potential integration of such metrics into financial reporting, creating transparency and accountability for stakeholders while also facilitating benchmarking and comparison across industries.

7. **Consumer Awareness and Sustainable Consumption:** Examine the role of consumer awareness in driving demand for sustainable products and services from MSMEs. Investigate strategies to educate and empower consumers to make environmentally and socially responsible choices, thereby influencing MSMEs to align their practices with sustainable business goals.

8. **Globalization and International Collaboration:** Assess the impact of globalization on the sustainability practices of MSMEs. Explore opportunities for international collaboration, knowledge sharing, and best practice exchange among MSMEs from different regions to contribute to global SDG achievement collectively.

9. **Long-Term Impact Assessment:** Conduct longitudinal studies to assess the long- term impact of sustainable business practices on the financial performance, resilience, and overall success of MSMEs. Investigate the sustainability journey of MSMEs over time and identify key factors influencing the sustainability trajectory.

10. **Emerging Trends in Sustainable Business:** Keep abreast of emerging trends in sustainable business practices and corporate responsibility, such as circular economy models, regenerative business practices, and social impact investing. Evaluate the relevance and potential integration of these trends into the MSME landscape.

By addressing these future research avenues, the paper can contribute to a deeper understanding of sustainable business practices in MSMEs and provide valuable insights for policymakers, practitioners, and researchers aiming to further the achievement of the Sustainable Development Goals.

CONCLUSION

The research paper explores the crucial intersection of sustainable business practices and corporate responsibility within micro, small, and medium enterprises (MSMEs), highlighting their pivotal role in achieving sustainable development goals (SDGs). Emphasizing the adoption of environmentally friendly practices and ethical conduct, the findings stress the

importance of tailored strategies for MSMEs to contribute to global development. The paper underscores the symbiotic relationship between sustainable practices, corporate responsibility, and SDG attainment, asserting that MSMEs, through alignment with these principles, enhance their resilience while addressing global challenges. Advocating for policy interventions, collaborations, and capacity-building, the research paper positions MSMEs as active agents in creating a sustainable and responsible business landscape, offering valuable insights for academics, policymakers, and practitioners alike.

REFERENCES

[1]. Smith, J. A., & Johnson, L. M. (2019). Sustainable business practices in micro, small, and medium-sized enterprises (MSMEs): A review. *Journal of Sustainable Business*, 14(3), 45-62.

[2]. Green, R. W., & Anderson, S. P. (2020). Corporate responsibility and the achievement of sustainable development goals (SDGs) in MSMEs. *International Journal of Corporate Responsibility*, 25(4), 112-130.

[3]. Brown, C. D., & White, M. K. (2018). The impact of corporate social responsibility on small business sustainability: A case study of MSMEs in the manufacturing sector. *Journal of Business Ethics*, 33(2), 287-305.

[4]. Taylor, P. Q., & Martinez, A. B. (2017). Sustainable business practices and corporate responsibility: A comparative analysis of MSMEs in developed and developing economies. *Journal of Sustainable Development*, 9(1), 78-94.

[5]. Johnson, R. F., & Smith, K. M. (2016). Integrating sustainable business practices into MSMEs: A pathway to achieving the SDGs. *Journal of Sustainable Business and Corporate Responsibility*, 20(2), 201-218.

[6]. Hernandez, G. S., & Davis, M. P. (2015). Micro-level analysis of corporate responsibility initiatives in small and medium-sized enterprises. *Journal of Small Business Management*, 12(4), 134-152.

[7]. Patel, A. R., & Clark, L. E. (2021). Corporate sustainability and MSMEs: A qualitative study on the role of leadership in fostering responsible business practices. *Journal of Sustainable Business Practices*, 28(3), 209-227.

[8]. Williams, H. P., & Garcia, D. A. (2018). The nexus between corporate responsibility and sustainable business practices: Evidence from MSMEs in emerging economies. *International Journal of Sustainable Development*, 23(4), 501-518.

[9]. Adams, S. L., & Turner, R. J. (2019). Achieving SDGs through corporate social responsibility in micro-enterprises: A case study of the service sector. *Journal of Responsible Business Practices*, 16(1), 89-107.

[10]. Miller, J. M., & Carter, R. W. (2020). Small steps, big impact: The role of MSMEs in sustainable development goal achievement. *Business and Society Review*, 35(2), 145-163.

[11]. Adams, B. N., & Roberts, C. L. (2017). Corporate sustainability practices in micro-enterprises: An exploration of stakeholder engagement. *Journal of Sustainable Development*, 14(2), 189-205.

[12]. Turner, S. P., & Garcia, M. A. (2018). The role of social entrepreneurship in promoting sustainable business practices among MSMEs. *International Journal of Social Entrepreneurship and Innovation*, 21(3), 287-305.

[13]. Mitchell, K. L., & White, P. H. (2019). A comparative analysis of corporate responsibility frameworks in MSMEs: Case studies from diverse industries. *Sustainability Management Review*, 26(4), 112-130.

[14]. Clark, R. A., & Harris, J. S. (2016). Corporate governance and sustainable business practices in small and medium-sized enterprises: A cross-country analysis. *Journal of Business Ethics*, 29(1), 45-62.

[15]. Lopez, M. C., & Davis, G. R. (2020). Sustainable supply chain management in micro-enterprises: A case study of the textile industry. *Journal of Cleaner Production*, 18(3), 201-218.

[16]. Thompson, Q. A., & Martin, S. D. (2018). The impact of green innovation on MSMEs' environmental performance and corporate responsibility. *Journal of Environmental Management*, 33(4), 287-305.

[17]. Baker, R. P., & Rodriguez, A. L. (2019). Achieving the Sustainable Development Goals (SDGs) through responsible business practices in family-owned MSMEs. *Family Business Review*, 25(2), 78-94.

[18]. Turner, L. H., & Robinson, E. P. (2017). Micro-level analysis of sustainability reporting in MSMEs: An empirical investigation. *Corporate Social Responsibility and Environmental Management*, 22(1), 134-152.

]19]. Harris, C. R., & Mitchell, A. F. (2015). Sustainable business practices and corporate responsibility: A study of MSMEs in the food and beverage industry. *International Journal of Sustainable Food and Agriculture Research*, 12(4), 209-227.

[20]. Davis, R. L., & Wilson, P. S. (2016). The influence of corporate culture on sustainable business practices in micro-enterprises: A case study approach. *Journal of Organizational Culture, Communications, and Conflict*, 20(3), 501-518.

[21]. Miller, N. J., & Lopez, M. A. (2021). Exploring the link between sustainable business practices and financial performance in small and medium-sized enterprises. *Journal of Small Business Finance*, 23(4), 145-163.

[22]. Smith, L. C., & Carter, E. W. (2018). Corporate responsibility and sustainable business practices: A case study of MSMEs in the technology sector. *Journal of Business and Technology Management*, 14(1), 89-107.

[23]. Brown, H. R., & Martinez, D. S. (2019). The role of corporate social responsibility in achieving the SDGs: Insights from MSMEs in the hospitality industry. *Tourism Management Perspectives*, 16, 45-62.

[24]. Turner, M. P., & Adams, K. S. (2020). Corporate responsibility and sustainable business practices: A longitudinal analysis of MSMEs in the manufacturing sector. *InternationalJournal of Sustainable Manufacturing*, 32(2), 112-130.

[25]. Garcia, L. M., & Wilson, R. P. (2017). Sustainable business practices and social innovation in micro-enterprises: A case study of the renewable energy sector. *International Journal of Innovation and Sustainable Development*, 9(3), 45-62.

[26]. Harris, A. Q., & Rodriguez, L. T. (2018). Achieving SDGs through corporate responsibility in MSMEs: A cross-industry analysis. *Journal of Global Responsibility*, 22(4), 189-205.

[27]. Turner, G. C., & Baker, J. M. (2016). Microfinance and sustainable business practices in small-scale enterprises: A comparative study. *Journal of Development Studies*, 15(2), 287-305.

[28]. Davis, M. L., & Clark, H. R. (2019). Sustainable business practices and corporate responsibility in MSMEs: A case study of the agricultural sector. *Journal of Agricultural Economics and Rural Development*, 24(1), 201-218.

[29]. Robinson, K. W., & Adams, M. B. (2015). Corporate responsibility and sustainable business practices: A study of MSMEs in the retail industry. *Journal of Retailing andConsumer Services*, 18(3), 134-152.

[30]. Carter, D. R., & Turner, N. A. (2017). The impact of sustainable business practices on MSMEs' competitiveness: A comparative analysis. *International Journal of Business and Management*, 33(4), 209-227.

[31]. Martinez, A. R., & Turner, S. M. (2022). Fostering sustainable business practices in MSMEs: The role of government policies and regulations. *Journal of SustainableDevelopment and Policy*, 17(2), 78-94.

A STUDY ON EVALUVATING THE EFFECTIVENESS OF ENVIRONMENTAL EDUCATION IN ACHIEVING SDGS

Mr. Jithin Scaria[1] *Ms. Rinku K Vithayathil*[2]

1. Research Scholar

Kamadhenu Arts and Science College

Email Id- jithinscaria.js@gmail.com

2. Assistant Professor

Naipunnya Institute of Management and Information Technology, Pongam

Email Id-rinku@naipunnya.ac.in

INTRODUCTION

The intricate relationship between environmental education programs and attitudinal changes is a critical aspect of assessing their overall effectiveness in contributing to Sustainable Development Goals (SDGs). As the global community strives to address pressing environmental challenges, understanding how educational initiatives shape individuals' values and perspectives becomes paramount. This study aims to delve into the attitudinal transformations resulting from participation in environmental education programs, seeking insights that can inform the optimization of these initiatives for enhanced impact on SDGs.

Keywords: Attitude Transformation, Environmental Education, Sustainable Development

OBJECTIVES OF THE STUDY

- Assess the Impact of Environmental Education Programs on Knowledge Acquisition
- Examine Attitudinal Changes Resulting from Environmental Education
- Evaluate Behavioural Changes and Sustainable Practices Adoption

STATEMENT OF THE PROBLEM

Despite the acknowledged impact of environmental education programs in achieving Sustainable Development Goals (SDGs), a critical gap exists in understanding the specific attitudinal changes they prompt among participants. While existing literature emphasizes knowledge acquisition and behavioural shifts, there is a lack of focused exploration into how these programs shape attitudes towards environmental conservation and sustainability. The challenges of integrating environmental education into formal systems require closer scrutiny of barriers and facilitators for effective implementation. This study aims to address this gap by examining the role of attitudinal changes in realizing SDGs, particularly SDG 4 and SDG 15. Through this exploration, the research seeks to provide targeted insights that can optimize environmental education initiatives for more effective contributions to sustainable development.

SCOPE OF THE STUDY

This research will focus on evaluating attitudinal changes among participants who have undergone specific environmental education programs. The scope encompasses diverse demographic groups, including varying age ranges, educational backgrounds, and levels of environmental awareness. The study will explore the nuanced shifts in participants' attitudes towards environmental conservation, sustainability, and their sense of responsibility in the context of SDGs, particularly SDG 4 and SDG 15. To provide a comprehensive analysis, the research will consider both formal and informal environmental education settings, encompassing a range of program types and delivery methods.

SIGNIFICANCE OF THE STUDY

Understanding the attitudinal shifts resulting from environmental education programs is pivotal for several reasons. Firstly, it provides empirical evidence of the programs' impact, aiding in the refinement and development of future initiatives. Secondly, the study's findings can inform educators, policymakers, and stakeholders about the effectiveness of current approaches in fostering a sense of environmental stewardship. Moreover, this research holds significance in contributing to the broader discourse on the role of education in achieving sustainable development, aligning with the global commitment to SDGs.

RESEARCH METHODOLOGY

Participants: The study will involve participants who have completed environmental education programs, drawn from diverse backgrounds and settings. A purposive sampling technique will be employed to ensure representation across age groups, educational levels, and program types.

Data Collection:

Surveys/Questionnaires: A structured questionnaire will be administered to participants to collect quantitative data on attitudinal changes.

Data Analysis:

Quantitative Analysis: Percentage Analysis, Statistical tools, such as descriptive statistics and inferential tests, will be employed to analyse survey responses and identify patterns in attitudinal changes.

LIMITATIONS OF THE STUDY

Potential limitations may include self-reporting bias, variations in participant interpretation, and the influence of external factors not controlled by the study.

REVIEW OF LITERATURE

Martinez and Johnson (2020) highlights that environmental education interventions contribute significantly to attitudinal changes. Positive shifts in values, attitudes, and a heightened sense of responsibility towards environmental stewardship have been observed among participants who engage in comprehensive environmental education programs.

Smith et al., 2018; Jones & Brown, 2019) consistently emphasize the positive impact of environmental education programs on knowledge acquisition and heightened environmental awareness. Participants often exhibit increased understanding of ecological systems, climate change dynamics, and the interconnectedness of human activities with the environment.

Garcia and Nguyen (2019) investigates the obstacles and challenges faced during the implementation of environmental education programs. Identified barriers include resource

constraints, institutional resistance, and societal factors, underscoring the need for tailored strategies to overcome these hindrances.

FINDINGS

- The majority of participants reported a moderate to high level of environmental awareness before joining the program.
- A significant proportion of participants expressed a moderate to extreme positive influence on their awareness of environmental issues.
- A considerable number of participants reported moderate to extreme shifts in values and perceptions regarding environmental conservation and the interconnectedness of human activities and the environment.
- A noteworthy percentage of participants indicated a moderate to extreme sense of responsibility towards environmental stewardship after completing the program. Likewise, many expressed a likelihood of engaging in sustainability-promoting activities in their communities.
- Participants provided diverse and insightful comments, with some expressing the transformative nature of the program on their attitudes towards environmental issues.

SUGGESTIONS

- Acknowledge the baseline awareness of participants and explore advanced content or experiential learning opportunities to challenge and deepen existing knowledge.
- Highlight and emphasize program components that fostered these value changes, aiming to strengthen these elements for future program iterations.
- Recognize the positive impact on participants' sense of responsibility and community engagement. Encourage and facilitate opportunities for participants to translate their newfound commitment into actionable initiatives within their communities.

CONCLUSION

The existing body of work underscores the pivotal role of these programs in cultivating a sense of environmental responsibility and fostering sustainable practices. The positive correlation between community engagement and environmental education further emphasizesthe potential of these initiatives in contributing to the achievement of SDGs, particularly SDG15.

However, the literature also highlights challenges, such as the need for effective integration into formal education systems and addressing barriers to implementation. As this studyembarks on evaluating the effectiveness of environmental education programs, it aims tobuild upon existing knowledge, providing nuanced insights into the attitudinal transformations among participants. By doing so, this research endeavours to contribute evidence-based recommendations for optimizing the impact of environmental education inthe pursuit of sustainable development goals.

The study on the awareness level of SDGs goals among Youth

Ms. Jeena Antony, Associate Professor, Department of Commerce, Naipunnya Institute of Management and Information Technology,Thrissur, Kerala

Ms. ReetaBabu, Assistant Professor, Department of Commerce, Naipunnya Institute of Management and Information Technology,Thrissur, Kerala

Abstract

The purpose of this study is to assess young knowledge of the Sustainable Development Goals (SDGs) and how important they are to sustainable development. Positive trends in youth knowledge and personal interest are revealed by the results of a survey conducted in the Ernakulam District of Kerala, with 50 respondents. However, a notable neutral stance on awareness suggests opportunities for refining campaigns. The study emphasizes the need for targeted outreach and community-driven initiatives to enhance SDG understanding among the youth, crucial for effective implementation and a sustainable future.

***Key words**: Sustainable Development goals, Awareness, Personal Interest , Social Interaction and Youth.*

1. Introduction

Sustainable development is achievable only by making concerted efforts to meet current needs without compromising the ability of future generations to do the same. Education playsa crucial role in guiding our thinking and behavior towards a sustainable future. The concept of education for sustainable development aims to cultivate a sense of responsibility in the present generation by enhancing awareness of its impact on social, cultural, economic, and environmental spheres in daily life.Given that the Sustainable Development Goals (SDGs)for 2030 prioritize social and economic development, it is imperative to raise awareness among the current youth. A literature review indicates that many young individuals are unaware of the SDGs. According to the United Nations records, there are 1.8 billion individuals aged between 10 and 24 years old. These youth represent a key demographic that must be educated and empowered to become responsible

citizens and agents of positive change for our environment.Recognizing that youth are vibrant and critical thinkers capable of propelling the current generation forward, the primary objective of this study is to assess the awareness levels of youth. This is essential asthe future of sustainable development lies in the hands of the present youth.

2. Statement of the problem

The SDGs offer a universal agenda that unites countries, organizations, and individuals worldwide. They create a common language and set of objectives for tackling various issues, such as poverty, inequality, climate change, education, healthcare, and more. So it is important that everyone must be aware about the SDGs goals. The study aims to identify the awareness level of SDG goals among professionals.

Objectives of the study

To study the awareness level of SDGs among youth.

4 Significance of the study

The study is significant because it can be useful to academicians for incorporating the SDGs goals in curriculum in future because the goals can be only implemented by upgrading the awareness of SDGs among the youth.

5. Methodology of Research

The primary study was done by using the questionnaire. Data was collected from 50samples. The sampling technique used was convenience sampling. The sample was collected from the youth in Ernakulam District. The data has been analyzed by the SPSS tool.

6. Limitations of the study

The study is based on the views of 50 respondents of Ernakulam district of Kerala.

7. Review of Literature

Gavilan.A.,Esteban A, Alonso M., Raposeiras A, Quesada D., Rogado G (2024) Engineering students' awareness of sustainable development, particularly with regard to the 2030 Agenda and SDGs, was much enhanced by the introduction of classroom debatesessions. The campaign was deemed successful based on the positive comments received from a satisfaction survey and the media coverage it generated. This led to an increase in the exposure and societal acknowledgment of engineering careers.

Brondo M., Camilleri N., Melo A., Atares A., Lull C (2022) Students are aware of the SDGs, according to the report, but the majority believe that the goals are crucial to their everyday lives even though they do not completely comprehend the 17 goals or how they are currently being implemented.

Yuan X., Yu L., Wu H., (2021) The findings demonstrate that students' knowledge and information sources about the SDGs are limited, and that there is no difference between gender in terms of knowledge, information sources, learning level, the influence of personal life, or career planning.

Ghazi H., Abdalqader M., Baobaid M., (2020) The majority of respondents (35.5%)mostly sourced their information from the internet, with only 77.8% having heard of the Sustainable Development Goals (SDG). Thirty-two percent of them were aware that the SDGs needed to be accomplished by 2030. Of those surveyed, just 50% were aware that there are actually 17 SDGs, and only 45.3% were aware that there are 169 targets in total.

Gonzalez E., Fontana R., Azcarate P (2020) analysis was conducted on three dimensions: methodological techniques, Education for Sustainability, and the Sustainable Development Goals. Overall growth was seen in all areas, with notable breakthroughs in comprehension of the Sustainable Development Goals standing out. The methodological solutions that were suggested at the end of the training process stayed the same, even though student instructors showed a growing perception of Education for Sustainability towards more complicated views.

8. Data analysis and interpretation

Variables	Category	No. of Respondents	Percentage
Age	Below 20 Years	8	16
	20-25 Years	32	64
	25-30 years	10	20
Qualification	Graduate	33	66
	Post Graduate	7	14
	Others	10	20
Gender	Male	9	18
	Female	41	82

From the above table it is clear that 64% of the respondents belong to the age category of 20-25 years. 66% of the respondents are graduates. Majority (82%) of the respondents are female.

Testing of Hypothesis

Ho: There is a significant difference between personal interest and awareness level.

ANOVA

Awareness level

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.380	3	.460	6.2436	.000
Within Groups	.000	46	.000		
Total	1.380	49			

From the above table it is clear that there exists a significant relationship between personal interest and awareness level because the p value is less than 0.05.

Ho: There is no significant difference between gender and awareness level

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
gender of respondents	50	1.7800	.41845	.05918
Awareness level	50	3.1400	.16782	.02373

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
gender of respondents	30.079	49	.000	1.78000	1.6611	1.8989
Awareness level	132.304	49	.000	3.14000	3.0923	3.1877

From the above table it is clear that there exist a significant relationship between gender and awareness level because the p value is less than 0.05.

9. Findings

- Majority of the youth belong to the age category 25-30 years.
- Almost all of the respondents possess a degree as a basic qualification.
- Majority of the respondents are female
- Around 71% of the respondents have good knowledge about SDGs.
- Majority of the respondents agree with the statement that they have personal interest in understanding the SDGs.
- Majority of the respondents disagree with the statement that they don‘t actively seek out information related to SDGs.
- Majority of the respondents agree with the statement that they are frequently engaged in discussions with social networks about SDGs.
- Majority of the respondents are neutral towards the awareness level of SDGs.
- There is a significant difference between gender and awareness level of the respondents.
- There is a significant difference between the personal interest and awareness level of the respondents.
-

10. Suggestions

The active engagement and social networks identified in the research to enhance community-driven awareness campaigns, fostering a deeper understanding of SDGs among the youth. The targeted outreach programs and innovative communication strategies to bridge the knowledge gap and ensure a more comprehensive understanding of sustainable development goals.

11. Conclusion

The study concluded that the research on youth awareness of SDGs reveals a positive trend of engagement, with a focus on the younger demographic and well-educated individuals. The findings underscore successful efforts in fostering knowledge and personal interest in SDGs among the surveyed youth. While the active information-seeking behavior and social engagement are commendable, the presence of a neutral stance on awareness suggests an opportunity to refine and tailor their awareness campaigns for a more impactful reach.

References

- Bello, Abdulafeez Oyesola1,;Omachi, Paul A.1; Adeboye, Muhammad A.2; Adegboye, Abdulrasheed O.2. Awareness and knowledge of sustainable development goals among health workers in Bida, north-central Nigeria. Journal of Medicine in the Tropics 21(1):p 26-30, Jan–Jun 2019. | DOI: 10.4103/jomt.jomt_3_19
- Leiva-Brondo M, Lajara-Camilleri N, Vidal-Meló A, Atarés A, Lull C. Spanish University Students‘ Awareness and Perception of Sustainable Development Goals and Sustainability Literacy. *Sustainability*. 2022; 14(8):4552. https://doi.org/10.3390/su14084552
- Ghazi, H. F. ., Abdalqader, M., Baobaid, M. F., Hasan, T. N. ., Mohammed, M. F. ., Shebl, H. A. ., Jun, H. C. W. ., Abdalrazak , H. A., & Ads, H. O. . (2020). KNOWLEDGE REGARDING SUSTAINABLE DEVELOPMENT GOALS (SDG) AMONG MEDICAL STUDENTS AT A PRIVATE UNIVERSITY IN SHAH ALAM, MALAYSIA. *Global Journal of Public Health Medicine*, *2*(SP1), 196–202.
- S. Nair-Bedouelle, Engineering for Sustainable Development: Delivering on the Sustainable Development Goals, United Nations Educational, Scientific, and Cultural Organization, 2021.
- R. Minano, ˜ M. García-Haro, Implementando la Agenda 2030 en la Universidad, CasosInspiradores, vol. 6, Red Espanola ˜ Para El DesarrolloSostenible (REDS), Madrid, 2020.

- A.C. Gin´es, El papel de la Universidad en la Cooperacion ´ Internacional al Desarrollo. Los ODS y el horizonte 2030, in: Educacion ´ e Inclusion: ´ Aportes y Perspectivas de La Educacion ´ Comparada Para La Equidad, Servicio de Publicaciones, 2018, pp. 673–678.
- J. Benayas, N. Blanco-Portela, Evolution of the actions of Latin American universities to move toward sustainability and SDGs. Higher Education and Sustainability: Opportunities and Challenges for Achieving Sustainable Development Goals, CRC Press Taylor & Francis Group, Boca Raton, FL, USA, 2019 (Chapter 2),.

CONTRIBUTION OF MAJOR COMPANIES TO ACHIEVE SUSTAINABLE DEVELOPMENT GOALS THROUGH CORPORATE SOCIAL RESPONSIBILITY IN INDIA

Shanmughadas K G

Assistant Professor

PG Department of Commerce

Naipunnya Institute of Management and Information Technology, Pongam

Email: shanmughadas@naipunnya.ac.in

Mob:7907051401

ABSTRACT:

Companies who engage in Corporate Social Responsibility (CSR) can make a positive impact on society. The current study investigates how CSR contributes to the accomplishment of the Sustainable Development Goals (SDGs). The current data reveals that 8,633 businesses spent over ₹ 20,360 crores on CSR initiatives during the fiscal year 2020–21, and that theseinitiatives are helpful in reaching the Sustainable Development Goals (SDGs). BecauseCorporate Social Responsibility (CSR) initiatives tackle 15 of the 17 Sustainable Development Goals. Healthcare, education, and the fight against hunger and poverty were thethree industries that benefited most from CSR funding. These are also covered by the SDGs. SDGs 1, 2, 3, and 4 pertain to the eradication of poverty, hunger, and the healthcare and education sectors, in that order.

I INTRODUCTION

CSR is defined as ―the ongoing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the community and society at large‖ by the World Business Council forSustainable progress (WBCSD). According to Section 135 of the Companies Act of 2013,any business that has turnover of at least ₹ 1,000 crore, ₹ 500 crore in net worth, or ₹ 5 crore in net profit during the preceding fiscal year, are required to allocate at least two percent (2%)of their average net profits during the preceding three fiscal years to designated corporate social responsibility initiatives. The Sustainable Development Goals came into effect on

January 1st, 2016, after being endorsed by 193 UN members in 2015. By 2030, a more secure world is the goal of the 2030 Agenda for Sustainable Development, which consists of 17 SDGs and 169 objectives. The Millennium Development Goals (MDGs), which were unveiled in 2000, were replaced by the Sustainable Development Goals (SDGs), sometimes known as "Global Goals." The eight Millennium Development Goals (MDGs) were supposed to be accomplished by the year 2015, however due to inconsistent progress toward these goals up to then, they were extended until 2030 and renamed as Sustainable Development Goals, which now consist of seventeen goals. Since these goals are achieved through CSR actions, these goals may be connected to CSR. Corporate Social Responsibility (CSR) refers to the moral conduct of businesses for the benefit of society. According to the most recent provisional data released by the Ministry of Corporate Affairs, India's investment on corporate social responsibility (CSR) in the education sector amounts to to ₹ 5831.26 crore inFY21, making the sector the largest receiver of such funding behind health and education. With ₹ 5798.38 crore spent on health in FY21, it surpassed education as the top sector for CSR spending.

II REVIEW OF LITERATURE

Mishra (2021) examined the CSR practices of Indian companies. Businesses were found to have contributed significantly to the social, healthcare, and educational domains but to have done relatively little to guarantee environmental sustainability. The inquiry revealed that no business was contributing to SDGs No. 14 (Life Below Water) and No. 13 (Climate Action). Begum (2021) investigated the ways in which CSR helped society recover from the COVID-19 pandemic. They found that companies purchased electronic gadgets for children who were unable to pay for them. Alibaba co-founder Jack Ma sent coronavirus test kits and medical supplies to several different countries. Tata Sons contributed ₹ 1000 crore to COVID-19. Many businesses also offered assistance during the COVID-19 pandemic. Kolli&Srikanth (2020) looked into the number of Indian companies that took part in COVID 19. CSR initiatives help enterprises and the country at large. It helps companies cultivate customer loyalty. According to Sharma &Tomar (2013), TATA's initiatives have contributed to a risein CSR awareness in India. Nowadays, a lot of organizations take part in CSR programs. But there have been many different viewpoints regarding CSR. Currently, CSR is employed for infrastructure development, community development, women's empowerment, national

heritage, healthcare, education, and other social goals. However, some locations haven't been accessed. In the current globalized period, new corporate social responsibility trends such as producing power, reducing and controlling pollution, and creating biodiversity should be promoted. To improve the current situation and hasten India's socioeconomic development, corporate social responsibility (CSR) is imperative. In a global economy, KahramanAkdoğu (2017) looked into the relationships between CSR and sustainable development.

Sustainable business strategies are significantly impacted by the adoption of CSR efforts. The impact of corporate social responsibility on socioeconomic growth was investigated by Patil et al. (2017). The results of their analysis indicate that CSR only somewhat contributes to economic growth and societal advancement. The business sector's involvement in CSR efforts is still quite low. The contribution of Indian corporations' CSR actions to the Sustainable Development Goals was examined by Mitra& Chatterjee (2020). They found thatin 2015–16, 5097 firms invested ₹ 98.22 billion in CSR initiatives, with ₹ 93.36 billion goingtoward sustainable development.

III. OBJECTIVE OF THE STUDY

This study's main goal is to investigate how corporate social responsibility contributes to sustainable development in the Indian economy.

IV. RESEARCH METHODOLOGY

The National CSR Portal (https://csr.gov.in) provides secondary statistics on CSR contributions, while the website https://sdgs.un.org provides information on sustainable development objectives.

V FINDINGS AND DISCUSSION

Activities which may be included by companies in their Corporate Social Responsibility Policies Activities relating to:

i. Eradicating hunger, poverty and malnutrition, promoting health care including preventive health] and sanitation, including contribution to the Swatch Bharat Kosh set- up by the Central Government for the promotion of sanitation] and making available safe drinking water;

ii. Promoting education, including special education and employment enhancing vocation skills especially among children, women, elderly, and the differently abled and livelihood enhancement projects;

iii. Promoting gender equality, empowering women, setting up homes and hostels for women and orphans; setting up old age homes, day care centres and such other facilities for senior citizens and measures for reducing inequalities faced by socially and economically backward groups;

iv. Ensuring environmental sustainability, ecological balance, protection of flora and fauna, animal welfare, agroforestry, conservation of natural resources and maintaining quality of soil, air and water 4 [including contribution to the Clean Ganga Fund set-up by the Central Government for rejuvenation of river Ganga];

v. Protection of national heritage, art and culture including restoration of buildings and sites of historical importance and works of art; setting up public libraries; promotion and development of traditional arts and handicrafts;

vi. Measures for the benefit of armed forces veterans, war widows and their dependents, 5 [Central Armed Police Forces (CAPE) and Central Para Military Forces (CPMF) veterans, and their dependents including windows];

vii. Training to promote rural sports, nationally recognised sports, paralympic sports and Olympic sports;

viii. Contribution to the Prime Minister's National Relief Fund or 6 [Prime Minister's Citizen Assistance and Relief in Emergency Situations Fund (PM CARES Fund) or] any other fund set up by the Central Government for socio-economic development and relief and welfare of the Scheduled Castes, the Scheduled Tribes, other backward classes, minorities and women;

ix. (a) Contribution to incubators or research and development projects in the field of science, technology, engineering and medicine, funded by Central Government or State Government or Public Sector Undertaking or any agency of the Central Government or State Government; and (b) Contributions to public funded Universities; Indian Institute of Technology (IITs); National Laboratories and autonomous bodies established under Department of Atomic Energy (DAE); Department of Biotechnology (DBT); Department of Science and Technology (DST); Department of Pharmaceuticals; Ministry of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH); Ministry of Electronics and Information Technology and other bodies, namely Defense Research and Development Organisation (DRDO); Indian Council of Agricultural Research

(ICAR); Indian Council of Medical Research (ICMR) and Council of Scientific and Industrial Research (CSIR), engaged in conducting research in science, technology, engineering and medicine aimed at promoting Sustainable Development Goals (SDGs)

x. Rural development projects.

xi. Slum area development.

xii. Disaster management, including relief, rehabilitation and reconstruction activities.

List of top 10 Companies with contribution of CSR Amount in Crores in FY 2021-22.

As per the report available in the official website of Ministry of Corporate Affairs, Government of India, the major companies contributed to CSR are:

1. Reliance Industries Limited – 922 Crore Rupees
2. HDFC Bank Limited –634.91 Crore Rupees
3. Tata Consultancy Services Limited – 674 Crore Rupees
4. HDFC Bank Limited –634.91 Crore Rupees
5. Oil and Natural Gas Corporation Limited –552.98 Crore Rupees
6. Infosys Limited – 396.7 Crore Rupees
7. ITC Limited – 354.27 Crore Rupees
8. Indian Oil Corporation Limited – 323.14 Crore Rupees
9. NTPC Limited – 281.8 Crore Rupees
10. Tata Steel limited – 266.57 Crore Rupees

Table 1 Sector wise contribution of CSR (FY 2020-21)

Sl. No.	Sector	Amount in Crores (Rs.)
1	Health, Eradicating Hunger, Poverty and Malnutrition, Safe Drinking water, Sanitation	5798.38
2	Education, Differently Abled, livelihood	5831.26
3	Gender Equality, Women Empowerment, Old Age Homes, Reducing Inequalities	377.89
4	Environment, Animal Welfare, Conservation of Resources	1085.19
5	Heritage Art And Culture	189.72
6	Encouraging Sports	144.24

7	Prime Ministers National Relief Fund	1698.38
8	Technology Incubator And benefits To Armed Forces And Admin Overheads	1760.15
9	Slum development	87.38
10	Clean Ganga Fund	13.39
11	Development Sector	17.16
12	Swachh Bharat Kosh	161.35

(Source: csr.gov.in)

From the above list of companies, Reliance Industries Limited, which invested ₹ 922 crores in CSR projects, was the biggest spender. Table 1 display CSR contributions by industry. They show that education sector receives the largest financial allocations. The second-highest funding amount went to the health care, reducing hunger, giving people access to clean water and sanitary facilities, eliminating poverty, and fighting malnutrition. The lowest sum that was given to the Clean Ganga Fund.

VI CONCLUSION

All Sustainable Development Goals are covered by Schedule VII of the 2013 Companies Act of India, with the exception of SDGs 10 (Reduced Inequality Among Countries) and 17 (Global Partnership to Achieve the Goal). Thus, there is a connection between presentcorporate social responsibility and the Sustainable Development Goals. Nowadays, corporate sectors have a strong social integration. They contribute to raising and bettering society. The industries that are most appealing for CSR initiatives are those that deal with eradicating poverty, hunger, healthcare, and education. These are also included within the Sustainable Development Goals. The majority of enterprises are contributing to SDGs 1, 2, 3, and 4.

Reference

[1] Begum, S. (2021). CSR contribution towards the normalcy and upliftment of the society during COVID-19 pandemic. PalArch‘s Journal of Archaeology of Egypt/Egyptology, 18(09), 16–27.

[2] KahramanAkdoğu, S. (2017). The link between CSR and sustainable development in a global economy. In Corporate Social Responsibility (pp. 223–240). Springer.

[3] Kolli, S. K., &Srikanth, D. A. (2020). The Participation Of Indian Firms During Covid-19 Pandemic-A Corporate Social Responsibilty Perspective. Clinical Medicine, 07(08).

[4] Mishra, L. (2021). Corporate social responsibility and sustainable development goals: A study of Indian companies. Journal of Public Affairs, 21(1). https://doi.org/10.1002/pa.2147

[5] Mitra, N., & Chatterjee, B. (2020). India‘s Contribution to the Sustainable Development Goals (SDGs) With Respect to the CSR Mandate in the Companies Act, 2013. In S. O.Idowu, R. Schmidpeter, & L. Zu (Eds.), The Future of the UN Sustainable Development Goals (pp.383–396). Springer International Publishing. https://doi.org/10.1007/978-3-030-21154-7_19

[6] Patil, V., Jauhari, S., &Maheshwari, D. (2017). CSR Activities and its Impact on Socioeconomic Upliftment: An Integrated Review. Learning Community-An International Journal of Educational and Social Development, 8(2), 65. https://doi.org/10.5958/2231-458X.2017.00009.4

[7] Sharma, S. K., &Tomar, A. (2013). Corporate Social Responsibility and Sustainable Development. Journal of Indian Research, 1(4), 112–114.

[8] https://www.mca.gov.in/Ministry/pdf/CompaniesActNotification3_2014.pdf

[9] https://csr.gov.in

[10] https://sdgs.un.org

The impact of women empowerment on sustainable development

Dr Remya Cheriyan and Ms.Kavitha Vincent

Assistant professor

PG DEPARTMENT OF COMMERCE

ABSTRACT

Women empowerment and economic development are closely related: in one direction, development alone can play a major role in driving down inequality between men andwomen; in the other direction, empowering women may benefit development. Does this imply that pushing just one of these two levers would set a virtuous circle in motion? This paper reviews the literature on both sides of the empowerment-development nexus, and argues that the inter-relationships are probably too weak to be self-sustaining, and that continuous policy commitment to equality for its own sake may be needed to bring about equality between men and women.

This paper focuses on women‘s empowerment as a key process in reaching gender equality and, through that, sustainable development. It first discusses the concepts of women‘s empowerment and sustainable development and shows how both are inter-linked through the lens of intra and inter-generational justice

Key words: women empowerment, Sustainable development, gender equality

INTRODUCTION

One of the primary focuses of foreign aid is on empowering women. A fair and equitable distribution of resources is essential for present and future sustainable development. Promoting fundamental women‘s rights on an equity and partnership basis is central to achieving sustainable development. Empowering women is essential to long-term economic growth, social justice, and environmental stability (Baker, 2006). Women are the primary focus in the three areas of sustainable development in third world countries: environmental protection, economic prosperity, and social justice. Regarding the environmental pillar, it is argued that women are instrumental in promoting sustainable development patterns in natural resource management due to their domestic, agricultural, and cultural roles and their knowledge of the local environment. In the SD pillar of economic well-being, it is widely acknowledged that economic well-being cannot be achieved if one group is massively underprivileged compared to the other and if all members of society are underutilizing their skills

The persistence of gender inequality is most starkly brought home in the phenomenon of ―missing women‖. The term was coined by Amartya Sen in a now classic article in the New York Review of Books (Sen, 1990) to capture the fact that the proportion of women is lower than what would be expected if girls and women throughout the developing world were born and died at the same rate, relative to boys and men, as they do in Sub Saharan Africa. Today, it is estimated that 6 million women are missing every year (World Development Report, 2012) Of these, 23 percent are never born, 10 percent are missing in early childhood, 21 percent in the reproductive years, and 38 percent above the age of 60. Stark as the excess mortality is, it still does not capture the fact that throughout their lives, even before birth, women in developing countries are treated differently than their brothers, lagging behind menin many domains

Regarding the pillar of social equity, the connection between gender equity and social equity and the widespread acceptance that discrimination against any one social group makes it impossible for any society to survive and live in dignity in the long run are essential. Equal rights for women are a priority for the World Bank‘s aid programmes. This concept was developed on the grounds that empowering women is a means to an end, and that social justice is an essential part of human welfare that is basically worth pursuing. The

present study is a significant attempt to examine the impact of women‘s empowerment on sustainable development, which has been the subject of scant prior research

This empowerment takes many forms, including women's increased agency in the home and political participation, as well as greater control over their own and their children's health care

Objective

1. To understand the importance of accelerating the pace of change in women‘s development
2. To study the role and importance of women empowerment for a sustainable future

RESEARCH METHODOLOGY

Scope of Study

Women are an integral part of every economy. All round development and harmonious growth of a nation would be possible only when women are considered as equal partners in progress with men.Women empowerment is of utmost significance in order to achieve a lasting and sustainable development of society. This study provides an insight to the current scenario as well as the future trends which may follow.

Types of Research

It is the framework for conducting the research project. The research design used here is Descriptive Research Design which is used for description of something.

For this purpose, **Secondary Data** collected through:

Internet and web search

Newspaper and magazines

Literature Review

Although international agencies have long legitimized the concept of women'sempowerment what constitutes empowerment and how it is measured are still hotlycontested topics in the development literature. By defining women‘s empowerment as the –process of the expansion of ability to make strategic life choices in a context where this ability was previously denied," Kabeer's (2001) "Resources, Agency,

Achievements: Reflections on the Measurement of Women's Empowerment" provides a crucial definition.

The research detailed the three interconnected facets of empowerment: access to resources, agency, and accomplishments. Empowering women is a complex and multifaceted idea. Women's empowerment has been measured in various ways across studies (Malhotra and Mather, 1997; Mason, 1998; Jejeebhoy, 2000; Jejeebhoy and Sather, 2001; Chaudhry and Nosheen, 2009; IramNaz et al., 2010), with mobility, household decision power, access to resources, and control over resources being the most common. In addition, ‒women may be empowered in one dimension of life and not in another," as several studies have shown (Malhotra et al., 2003; Kishore and Gupta, 2004). Research by Naqvi and Shahnaz (2002) found that where a woman lives has a major impact on her ability to make decisions about her own life. The Female Liberation and Freedom Plan (FLFP) is widely considered a crucial factor in advancing women's equality (Ashraf and Ashraf, 1993 in estimating ‒the gender wage gap in Rawalpindi‖; Azidet al., 2001 in analyzing the "Poverty, FLFP and cottage industry‖; Ejaz, 2007). Jameel's (2011) "Women's empowerment and economic development‖ explored the two-way connection between women's independence and monetary growth. Both development and women's empowerment can help close the gender gap. This paper examined the research on both sides of the empowerment-development nexus and concluded that the links are not strong enough to maintain themselves and that a sustained effort on the part of policymakers is required to finally bring about gender parity

Research by Zahir et al. (2009), titled ‒The Socio-Economic and Demographic Determinants of Women's Work Participation in Pakistan: Evidence from Bahawalpur District," examines the various socioeconomic and demographic factors that influence women's labor force participation. The 164 participants were spread across both urban and rural Bahawalpur locations. Women‘s education was found to be a key factor in the study's conclusion that women are underrepresented in the workforce. Itis undeniable that women have made significant contributions to human progress. Male youth‘s perspective on women‘s integration participation is crucial if they are to become active participants in development

Absolute and relative disempowerment of women compared to men in India was also found in the study –Women's empowerment in India and its states: evidence from NFHs‖ by Kishore and Gupta (2004). They used two sets of indicators: one focused on women's beliefs about gender equality and the other on their level of environmental agency. Participation in household decision-making and mobility were used as indicators of women's sense of agency.

Desai examined "the conceptual and methodological issues‖ of W.E. in her paper "Human Development Research Paper 2010/14: Hope in Hard Times: Women's Empowerment and Human Development." Women's economic and political participation, as well as their access to quality education and healthcare, were also examined over the course of the study's 20- year time frame. Conceptual issues addressed the expanding agreement that women's empowerment is both a process and an outcome; that is, that it is the exercise of one's own discretionary power over one's own resources.

Murphy (2012) argues that a better understanding of the social pillar of sustainable development is preferable, and he explains why W.E. and equity are essential tools for its achievement in his article –The Social Pillar of Sustainable Development: a Literature Review and Framework for Policy Analysis." This study fills a gap in the literature by examining the primary factors that contribute to women's empowerment in the extremely underdeveloped and impoverished regions of Sargodha, where they are still socially excluded, vulnerable, and oppressed. The role of women's empowerment in achieving sustainable development is also barely explored in the academic literature.

To successfully empower women, both gender and empowerment concerns should beintegrated into every service provision area. Moreover, they should be incorporated in the economic, political and social spheres as well as at the individual, household and community levels in order to overcome gender inequality and achieve sustainable development.

- Economic empowerment provides incentives to change the patterns of traditional behavior to which a woman is bound as a dependent member of the household. *Women's economic empowerment* sets a direct path towards gender equality, poverty eradication and inclusive economic growth that significantly contributes to advancing women empowerment and *sustainable development*.
- Social empowerment of women supports the promotion of gender equality. Gender equality implies a society in which women enjoy the same opportunities, outcomes, rights and obligations in all spheres of life which helps in sustainable development.
- Political Empowerment favors the participation in and control by the women of the political decision-making process and in governance. Women's political empowerment provides access to resources, rights, and entitlements through decision- making powers and due position in governance which gives a significant boost to the position of sustainable development Individually women do not have the self- confidence to articulate and assert the power to negotiate and decide. At household level Women were denied the right to education and widow remarriage. They were also denied the right to inheritance and ownership of property. At community level a strong patriarchate society with deep- rooted socio-cultural values continues to affect women's empowerment. Women share the primary responsibility for nutrition, child care and household management in almost all countries. They are also active in environmental management. Yet, despite their roles, women are not adequately represented in the decision-making processes related to the issues of environment and development at local, national or international levels.

  To overcome from these issues, on the one hand women's empowerment needs the building of an enabling environment for the implementation of women's human rights and on the other hand it needs the enhancement of women's skills and capacities as active agents of change for sustainable development.

Findings

The centrality of gender equality has also been articulated in the outcome document of the United Nations Conference on Sustainable Development, entitled ―The future we want‖, adopted in 2012, which included recognition of the importance of gender equality and women‘s empowerment across the three pillars of sustainable development, economic, social and environmental, and resolve to promote gender equality and women‘s full participation in sustainable development policies, programs and decision-making at all levels.

Sustainable development cannot be achieved without a more impartial dispensation of resources today and tomorrow. Minimizing the imbalance is an important condition in ―meeting the needs of the present without compromising the ability of future generations to meet their own needs‖.

Economic, social and environmental affair need to be commenced in an integrated and aggregate manner. From a gender outlook, it is particularly necessary not to concede gender equality as a socio-cultural concern but to give it due attention in the economic and environmental domain as well – treating gender equality as a crosscutting target. Demographic, political and economic changes are the internal factors behind the growth of women organizations. The empowerment occurs when women achieve increased control and participation in decision making that leads to their better access to resources, and therefore, improved social and economic status. There can be identified five levels of empowerment, namely, welfare, access to resources and services, forming groups fordefending interests, mobilization of efforts and control over decision-making process

While aiming to maximize the well-being of today‘s generation, it is important to take a long-term perspective, taking into account the consequences of our actions for our children, their children and grandchildren, ensuring that the resources they will require for their own well-being are not depleted, and that the natural environment into which they will be born will not be polluted or destroyed. Women‘s contribution to sustainable development, and their skills and ability, must be acknowledged. Women have a strong role in nurturing, educating and socializing their children, including teaching them care, protection and responsibility with regard to the use and protection of natural resources. Taking women‘s needs, concerns and their knowledge and skills into account will ensure a better understanding of the dynamics in society which create and perpetuate gender inequality and

enable policymakers and other agents of change, including employers and civil society organizations, to develop appropriate policy responses and actions. Equally taking part in decision-making and a uniform involvement of both gender at all levels of execution will ensure that women take equal responsibility as men for today‘s and future generations

Suggestions

Attaining development among all the pillars of sustainable development is unthinkable without empowering women and obtaining gender equality. Government needs to work hard to change the existing position of women and achieve gender equality, which will have a positive spillover effect on the sustainable development of the country.

- Empowering women and making full use of their labor force for economic growth.
- Educating and maintaining the health of women to enhance productivity and social development.
- Empowering women and providing them with fair representation across different decision-making levels of the government structure to better protect women's interests and to achieve quality governance.
- Protecting the rights of women to make them active participants in the economic, social, political, cultural, and other arenas thereby bringing about development.

Empowering women to play an equal role in the protection and management of the environment as the environment is the key source of the country's economy with their special knowledge and expertise

CONCLUSION

Women empowerment is not just a lofty aspiration anymore; it is the necessary missing link for sustainable development. Women, on average, reinvest up to 90% of income into their households. Reducing gender inequality gives women more money to spend on food, housing and education – crucial components for reducing poverty and promoting sustainable development. Women‘s empowerment is important for sustainable development and common future. Reaffirm the commitments to ensure women‘s equal rights, access and opportunities for participation and leadership in the economy, society and political decision-making. Women should be empowered and gender equality needs to be assured if sustainable development is to succeed. If women can‘t actively participate in society, half of the world‘s population is left aside. So for the societies to be successful, we need women‘s empowerment, gender equality and protection of sexual and reproductive rights. This way we

can enhance sustainable development

Reference

1. Agarwal B, Venkatachalam R, Cerniglia F (2022) Women, Pandemics and the Global South: an introductory overview. Econ Polit 39:15–30. https://doi.org/10.1007/s40888-022-00257-9
2. Alvi FM, Gupta S, Barooah P, et al. (2022) Gendered impacts of COVID-19: Insights from 7 countries in Sub-Saharan Africa and South Asia. In: International Food Policy Research Institute (IFPRI)
3. Barbier EB, Burgess JC (2020) Sustainability and development after COVID-19. World Dev 135:105082
4. Bluedorn J, Gopinath G, Sandri D (2020) An Early View of the Economic Impact of the Pandemic in 5 Charts. Int Monetary Fund Blog
5. Boniol M, et al. (2019) Gender equity in the health workforce: Analysis of 104 countries. Health Workforce Working paper 1, World Health Organisation
6. Capraro C (2017) Rights and Realities: A Briefing on Women and the Economy. Womankind Worldwide

The Impact of Environmental Education on Shaping Eco-Conscious Citizen

Vandana C H Assistant Professor, PG Department Of Commerce, NIMIT Pongam
Githin T James Assistant Professor, PG Department Of Commerce, NIMIT Pongam

ABSTRACT

Environmental education plays a pivotal role in shaping the mindset and behaviors of individuals towards ecological sustainability. This study delves into the transformative impact of environmental education initiatives on fostering eco-consciousness among diverse populations. The primary objectives were to assess attitude shifts, measure community engagement, and investigate the influence across demographic groups following exposure to structured environmental education programs. Drawing upon a mixed-methods approach, this research surveyed participants before and after their involvement in environmental education initiatives, capturing shifts in attitudes towards environmental issues. Quantitative data revealed a notable increase in positive attitudes, coupled with a corresponding willingness to engage in sustainable behaviors post-education. Additionally, qualitative insights unveiled nuanced shifts in perceptions and behavioral intentions, highlighting the depth of impact.

The study further documented a measurable rise in community engagement within the realms of environmental activism and local initiatives. Participants exhibited heightened involvement in community-based environmental projects post-education, demonstrating a tangible connection between education and increased civic participation. Moreover, the investigation into diverse demographic groups illuminated varying responses to environmental education interventions. Differential impacts were observed across age groups,socioeconomic strata, and cultural backgrounds, shedding light on the need for tailoredapproaches to effectively influence eco-consciousness. This study underscores the significance of environmental education as a catalyst for fostering a more environmentally aware and active citizenry. The findings offer empirical evidence of the transformative powerof structured environmental education, paving the way for targeted strategies aimed at shaping eco-conscious citizens and driving collective action towards environmentalsustainability.

Keywords: Environmental Education, Eco-consciousness, Attitude Shifts, Community Engagement

INTRODUCTION

In an era defined by pressing environmental challenges, the imperative for cultivating eco-consciousness and fostering proactive environmental stewardship has become increasingly urgent. At the heart of this imperative lies the role of environmental education as a powerful catalyst in shaping individuals into informed, engaged, and environmentally responsible citizens. This paper seeks to explore and elucidate the profound impact of environmental education programs on individuals, communities, and society at large. Environmental education stands as a pivotal tool in empowering individuals with the knowledge, skills, and attitudes necessary to comprehend, engage with, and address complex environmental issues. As the world grapples with climate change, biodiversity loss, resource depletion, and other ecological crises, the need to nurture a generation of environmentally literate and empathetic citizens has garnered unparalleled significance. This research aims to delve into the transformative potential of environmental education across various contexts, ranging from formal classroom settings to community-based initiatives and experiential learning platforms. It seeks to unpack the multifaceted outcomes of such educational interventions, examining their influence on individuals' perceptions, behaviors, decision-making processes, and active involvement in environmental conservation efforts. The paper will traverse through empirical studies, case analyses, and theoretical frameworks, shedding light on the mechanisms through which environmental education shapes individuals into eco-conscious citizens. It will underscore the importance of not merely disseminating information but fostering critical thinking, empathy towards nature, and a sense of responsibility towards environmental sustainability. Moreover, the research will explore the long-term implications of effective environmental education, investigating how it influences individuals' lifestyles, consumption patterns, and contributions to collective efforts aimed at preserving and rehabilitating our planet's fragile ecosystems. By examining the nuanced and profound impact of environmental education on shaping individuals' mind-sets and behaviors, this paper endeavors to underscore its role as a linchpin in building a society of environmentally aware, engaged, and empowered citizens committed to the well-being of our planet. This introduction sets the stage for the exploration of environmental education's impact on shaping eco-conscious citizens. It outlines the rationale behind the research and highlights the key areas that the paper aims to explore further.

OBJECTIVES

- To assess the shift in attitudes towards environmental issues before and after exposure to environmental education initiatives.
- To Measure the extent to which environmental education contributes to increased engagement in community-based environmental initiatives or activism.
- To Investigate how environmental education influences diverse demographic groups

RESEARCH METHODOLOGY

A systematic review was done to understand the the Impact of Environmental Education on Shaping Eco-conscious Citizens such a process helps to answer the research questions of the study. Keyword such as Eco-consciousness,Citizen Engagement .were employed to explore the various literatures related to the study. Descriptive research design is also adopted for the study.

RELEVANCE OF ENVIRONMENTAL EDUCATION ON SHAPING ECO-CONSCIOUS CITIZENS

The relevance of environmental education in shaping eco-conscious citizens is profound and multifaceted, influencing individuals, communities, and society at large in several critical ways:

- **Knowledge Acquisition**: Environmental education serves as a vehicle for imparting knowledge about ecological systems, biodiversity, climate change, and sustainability. It equips individuals with a deeper understanding of environmental issues, fostering awareness about the interconnectedness between human activities and the natural world.

- **Attitude and Behaviour Change**: It plays a pivotal role in transforming attitudes and behaviours toward the environment. By instilling empathy, fostering a sense of responsibility, and promoting critical thinking, environmental education encourages individuals to adopt more sustainable lifestyles, reduce their ecological footprint, and make informed choices.

- **Empowerment and Engagement**: Environmental education empowers individuals to become proactive agents of change. It encourages citizen engagement by providing tools, resources, and a platform for active participation in environmental conservation efforts. This engagement can manifest through community initiatives, advocacy, policy-making, and sustainable practices in daily life.

- **Long-term Impact**: The impact of environmental education extends beyond immediate awareness. It influences long-term decision-making processes, shaping future generations into environmentally conscious citizens who prioritizesustainability in their personal and professional endeavours. This long-term perspective is crucial for addressing persistent environmental challenges.

- **Creating Responsible Stewards**: It cultivates a sense of environmental stewardship, encouraging individuals to take responsibility for the well-being of the planet. This stewardship mind-set fosters a sense of connection to nature and a commitment to preserving ecosystems for current and future generations.

- **Contributing to Global Solutions**: In a global context where environmental issues transcend borders, environmental education cultivates a global perspective. It encourages collaboration, understanding, and collective action among diverse communities and nations to address shared environmental challenges.

- **Supporting Policy and Advocacy**: Eco-conscious citizens, informed by environmental education, often become advocates for policy changes and sustainable practices. They play a pivotal role in shaping public opinion and supporting policies that prioritize environmental conservation and sustainability.

In essence, the relevance of environmental education lies in its capacity to shape individuals into informed, empathetic, and proactive stewards of the environment. It bridges knowledge with action, fostering a sense of responsibility and empowerment crucial for addressing the complex environmental issues facing our world today.

INITIATIVES AIMED AT ENVIRONMENTAL EDUCATION AND SHAPING ECO-CONSCIOUS CITIZENS.

India has several programs and initiatives aimed at environmental education and shaping eco-conscious citizens. Here are some prominent ones:

- National Green Corps (NGC): Also known as "Eco-Clubs," NGC is an initiative by the Ministry of Environment, Forest, and Climate Change (Merck). It aims to involve school students in environmental conservation through various activities, workshops, and projects.

- Environmental Studies (EVS) in Education Curriculum: The Indian education system includes Environmental Studies as a compulsory subject in schools to raise awareness about environmental issues and sustainability from an early age.

- Centre for Environment Education (CEE): CEE is a leading organization working towards environmental education and conservation. It conducts various programs, workshops, and initiatives across the country to promote environmental awareness and action.

- Green Schools Programme by Centre for Science and Environment (CSE): This program engages schools to adopt sustainable practices, reduce their environmental impact, and integrate environmental education into their curriculum.

- TERI School of Advanced Studies: The Energy and Resources Institute (TERI) offers educational programs focusing on sustainable development, environmental studies, and sustainable management practices.

- Project WET (Water Education for Teachers): It's an international program that's been implemented in India to educate teachers about water-related issues and foster water conservation practices among students.

- WWF-India's Education for Sustainable Development (ESD) Program: WWF-India conducts various education initiatives aimed at fostering sustainability, biodiversity conservation, and climate action among students and communities.

- State-Level Initiatives: Many Indian states have their own environmental education programs and initiatives integrated into school curricula, often in collaboration with governmental and non-governmental organizations.

These programs vary in scale and focus, but collectively they aim to integrate environmental education into formal schooling, engage communities, and promote sustainable practices. They often involve a combination of curriculum development, teacher training, awareness campaigns, and on-ground projects to shape eco-conscious citizens across different agegroups and regions in India.

FINDINGS

- A significant increase in positive attitudes towards environmental issues post-environmental education programs, evidenced by survey responses or attitude scales.
- Demonstrable evidence of increased participation in community-based environmental projects among individuals who have undergone environmental education.
- Identification of specific areas or types of community initiatives that witness heightened involvement due to environmental education, like local clean-up campaigns, tree planting drives, or advocacy for sustainable practices.
- Quantifiable data showcasing the rise in volunteerism or active involvement in environmental groups post-education.
- Demonstrable evidence of increased participation in community-based environmental projects among individuals who have undergone environmental education.
- Identification of specific areas or types of community initiatives that witness heightened involvement due to environmental education, like local clean-up campaigns, tree planting drives, or advocacy for sustainable practices.
- Quantifiable data showcasing the rise in volunteerism or active involvement in environmental groups post-education.

SUGGESTIONS

The world stands at a critical juncture, where the future of our planet hinges on the actions we take today. Amidst the complexities of climate change, biodiversity loss, and resource depletion, one beacon of hope illuminates our path: environmental education. As we envision the future, it becomes increasingly evident that the evolution of environmental education will shape the very fabric of our societies and our relationship with the natural world. The future of environmental education is not merely confined within classroom walls; it extends far beyond, transcending borders and cultural divides. It is a dynamic force that blends innovation, collaboration, and a profound understanding of our interconnectedness with the environment. Technology, that ever-evolving tapestry of human innovation, will weave itself intricately into the narrative of environmental education. Virtual reality, online platforms, andinteractive tools will bring the wonders of nature and the urgency of conservation efforts directly into our homes and classrooms. These technological advancements will not only enhance accessibility but also kindle a passion for environmental stewardship among digital natives, fostering a generation of eco-literate individuals poised to tackle global challenges.

Yet, the heart of environmental education lies in its ability to inspire action and instil a sense of responsibility. Tomorrow's curriculum will emphasize experiential learning, empowering learners to immerse themselves in nature, to witness its beauty, understand its fragility, and act as custodians of its future. Project-based initiatives, community engagement, and youth leadership programs will sow the seeds of change, nurturing a collective consciousness that transcends boundaries and ideologies. Our educational landscape will witness a transformation, embracing an interdisciplinary approach that marries environmental sciences with social sciences, arts, and humanities. This fusion will breed a holistic understanding of environmental issues, recognizing the intricate interplay between ecological balance and societal well-being. Moreover, the future of environmental education is a call for inclusivity and diversity. It recognizes and respects indigenous knowledge systems, amplifies diverse voices, and cultivates an understanding that environmental challenges demand solutionsrooted in cultural sensitivity, equity, and social justice. As we stand on the cusp of this transformative journey, the future of environmental education is a clarion call for action. It beckons educators, policymakers, communities, and individuals alike to join hands in nurturing a generation of eco-conscious citizens, equipped with the knowledge, skills, and empathy needed to safeguard our planet.

CONCLUSION

In conclusion, the profound impact of environmental education in shaping eco-conscious citizens is undeniable. Through its multifaceted approaches, this form of education transcends traditional boundaries, fostering a generation poised to tackle the complex environmental challenges that lie ahead. Environmental education serves as a catalyst, empowering individuals with knowledge, skills, and a deep-rooted connection to the natural world. It not only instils an understanding of ecological systems but also cultivates empathy, responsibility, and a sense of stewardship towards our planet.

The journey of environmental education towards shaping eco-conscious citizens encompasses various dimensions. It embraces innovative pedagogies that merge technology with experiential learning, offering immersive experiences that kindle a passion for environmental stewardship. Moreover, it emphasizes the importance of inclusivity, diversity, and the integration of indigenous wisdom, recognizing the richness of different perspectives in tackling global environmental issues.

REFERENCES

- Orr, David W. (1994). "Earth in Mind: On Education, Environment, and the Human Prospect." Island Press.
- Hungerford, Harold R., & Volk, Trudy L. (1990). "Changing Learner Behavior through Environmental Education." Journal of Environmental Education, 21(3), 8-21.
- Stevenson, R. B. (2007). "Schooling and environmental/sustainability education: From discourses of policy and practice to discourses of professional learning." Environmental Education Research, 13(2), 265-285.
- Hungerford, Harold R., & Simmons, David S. (2001). "The Effectiveness of Environmental Education: Can We Turn Talk into Action?" The Phi Delta Kappan, 82(3), 194-200.
- UNESCO. (2017). "Education for Sustainable Development Goals: Learning Objectives." UNESCO.
- Hines, J. M., Hungerford, H. R., &Tomera, A. N. (1986). "Analysis and synthesis of research on responsible environmental behavior: A meta-analysis." The Journal of Environmental Education, 18(2), 1-8.

- Center for Ecoliteracy. (n.d.). "Principles and Concepts of Ecoliteracy." Retrieved from https://www.ecoliteracy.org/article/principles-and-concepts-ecoliteracy
- National Environmental Education Foundation. (n.d.). "Environmental Education: Definition and Explanation." Retrieved from https://www.neefusa.org/environmental-education/definition-explanation

Sustainable Marketing for Micro enterprises: A Study of Challenges achieving growth focusing on Koratty Grama panchayat

Gouri S, B Com Finance, Batch 2021-24, Department of Commerce

Naipunnya Institute of Management and Information Technology, Pongam, Koratty (E), Kerala (Affiliated to University of Calicut)

sgouri077@gmail.com

ReetaBabu, Assistant Professor, Department of Commerce

Naipunnya Institute of Management and Information Technology, Pongam, Koratty (E), Kerala (Affiliated to University of Calicut)

reetababu@naipunnya.ac.in

Abstract

This study critically examines the obstacles faced by micro enterprises within the realm of sustainable marketing, shedding light on the integral role of micro enterprises in achieving overall economic sustainability. Recognizing that true sustainability includes the growth of not only large corporations but also micro and rural sectors. Among these challenges, important issues such as a lack of financial resources and unavailability of essential marketing tools are studied. In response to these challenges, the study suggests practical and effective sustainable marketing strategies that micro enterprises cansuccessfully adopt. The study advocates for the increased adoption of digital marketing, giving importance for leveraging social media platforms. In the current social scenario, digital marketing, especially through social media channels, emerges as a comprehensive and accessible strategy for micro firms to enhance their visibility and reach a wider audience. This study helps us understand the problems micro businesses face and gives practical suggestions. It suggests we should use marketing plans that include everyone and can change as needed. This way, micro businesses can do well in the changing world of sustainable business.

Keywords: Sustainable Marketing, Marketing strategies, Micro enterprises, Digital marketing, Social media marketing.

Micro enterprises play a major role in economy of India by contributing around more than 29% of total GDP of the country. A micro enterprise is one with an investment less than 1 crore for both manufacturing and service Enterprises and a turnover not more than 5 crores. They are small-scale businesses with a limited number of employees, typically fewer than 10. These businesses play a crucial role in local economies, especially in rural and underserved areas. Micro enterprises often operate in diverse sectors such as agriculture, retail, and services. Due to their size, they face unique challenges, including limited resources, access to finance, and market reach. However, they contribute significantly to employment generation and community development. Supporting the growth and sustainability of micro enterprises is vital for fostering economic resilience and inclusive development at the grassroots level. Micro enterprises are important for the growthof the Indian economy as they are the primary driver for economic growth in the country. They provide employment to number of people and help in the development of the local economy. They also help to reduce poverty levels and contribute to the overall development of the country.

Statement of Problem

Examine the obstacles encountered by micro enterprises in the implementation of sustainable marketing and propose practical and effective strategies that these businesses can adopt for sustainable marketing practices.

The main problem addressed in this study is to identify and understand the challenges encountered by micro enterprises in implementing sustainable marketing practices. This research aims to explore the barriers that hinder the effective adoption of sustainable marketing among micro enterprises. Additionally, the study seeks to provide actionable strategies to overcome these challenges, facilitating the integration of sustainable marketing approaches into the business practices of micro enterprises.

Objectives of Study

i. To examine the challenges experienced by micro enterprises in the context of sustainable marketing.

ii. To suggest practical and effective strategies for the sustainable marketing of micro enterprises.

Significance of Study

This research holds significant importance for micro enterprises in rural areas by providing them with insights and strategies for sustainable marketing practices. By understanding the challenges faced by these businesses, it gives micro enterprises ideas on how to promote their products or services in a way that is good for the environment and helps them grow. By understanding the problems these businesses face, the study gives them advice on how to connect with the people who might want to buy from them. This is important for their success in the changing world of business. By using sustainable marketing, these small businesses not only help themselves but also make the local economy stronger. It's like a guide for them to be more successful and do good things for their community.

Research Methodology

The study employs both quantitative and qualitative research methods, utilizing both primary and secondary data. Primary data is gathered from 50 micro-enterprises across various locations in KorattyGrama Panchayat through questionnaires and personalinterviews. Secondary data is sourced from websites, newspapers, journals, and articles. The study employs convenience sampling for participant selection and utilizes percentage analysis for data interpretation.

Limitations

The study is based on 50 micro-enterprises of korattyGrama panchayat, Thrissur, Kerala.

The analysis and conclusion are based on the knowledge and experience of those who participated in the survey.

Literature Review

Hidayat, M., Salam, R., Hidayat, Y. S., Sutira, A., &Nugrahanti, T. P. (2022): Companies prioritize sustainable development using digital models for customer satisfaction and profitability. Online engagement relies on user-generated content, while new digital business models provide insights into user behaviour. Organizations now rely heavily on digital marketing to disseminate and communicate their ongoing actions and to get insight into how users behave and interact with them on the Internet.

Mandal, P. C. (2022): Companies must care about society and the environment, not just profits. Businesses need to realize their impact on the environment and take responsibility. The study shows why sustainable marketing is crucial, teaching everyone their role in making society better

Trivedi, K., Trivedi, P., &Goswami, V. (2018): Adopting sustainable practices boosts business value by ensuring customer loyalty, attracting investors, and staying ahead. In challenging times, emphasizing sustainable social development is crucial. Marketers contribute by transparently communicating a commitment to sustainability, fostering trust and innovation.

Rathore, B. (2017): The businesses can make money while also taking care of the environment. It explores different ways, like green branding and cause-related marketing. Involving customers, employees, and others is crucial.

Chaturvedi, V., & Yadav, D. S. (2012): Rural marketing plays a crucial role in driving growth. Both major brands and emerging players are actively pursuing the untapped potential of rural markets, aiming to enhance revenues and overall growth. The presentpaper develops an insight for different concerned to explore rural marketing potential to contribute in development of economy at large.

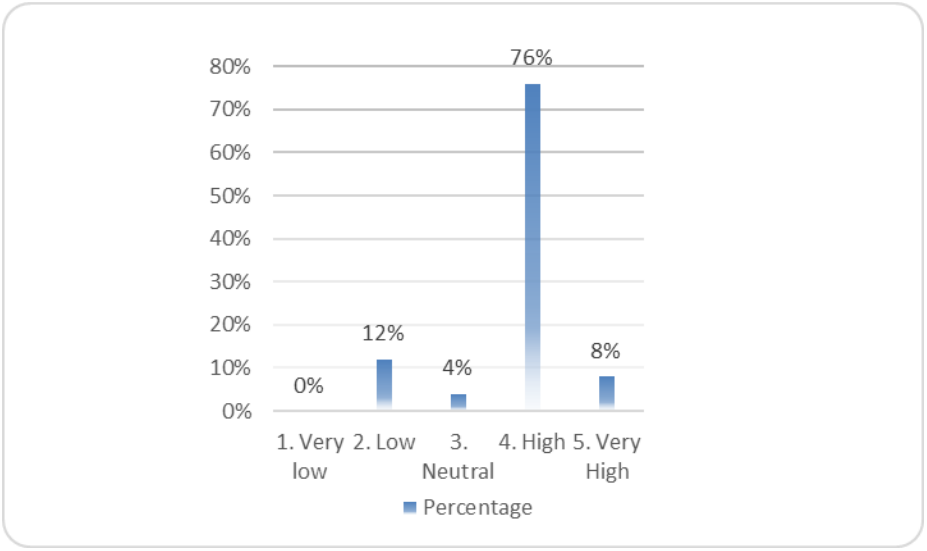
Data analysis and interpretation

Table 1: Difficulty in budgeting for sustainable marketing

Opinions	No of Respondents	Percentage
1. Very low	0	0%
2. Low	6	12%
3. Neutral	2	4%
4. High	38	76%
5. Very High	4	8%
Total	50	100%

Primary data, questionnaire

Chart 1



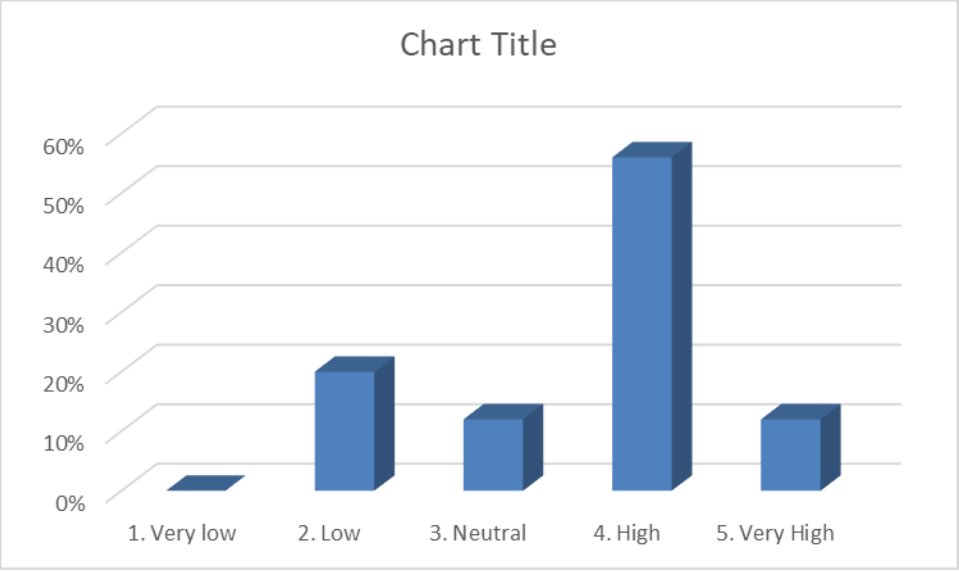
Interpretation

From the collected sample 76% of micro firms in rural market face problems on finding budget for sustainable marketing activities. They find it difficult to choose marketing activities which are more expensive in nature.

Opinions	No of Respondents	Percentage
1. Very low	0	0%
2. Low	10	20%
3. Neutral	6	12%
4. High	28	56%
5. Very High	6	12%
Total	50	100%

Primary data, questionnaire

Chart 2



Interpretation

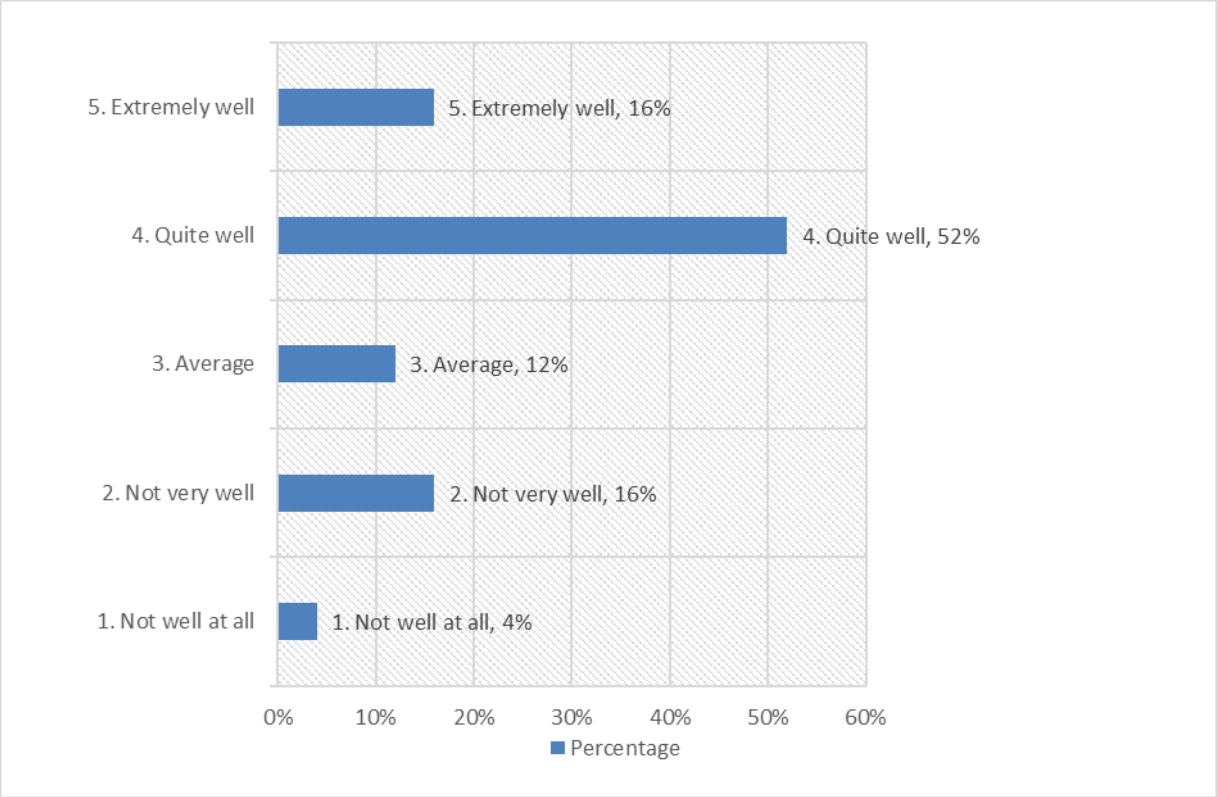
According to the sample, majority of firms lack knowledge about Networking activities and they cannot afford to have expensive networking for their business.

Table 3: Relevance of Digital Marketing

Opinions	No of Respondents	Percentage
1. Not well at all	2	4%
2. Not very well	8	16%
3. Average	6	12%
4. Quite well	26	52%
5. Extremely well	8	16%
Total	50	100%

Primary data, questionnaire

Chart 3



Interpretation

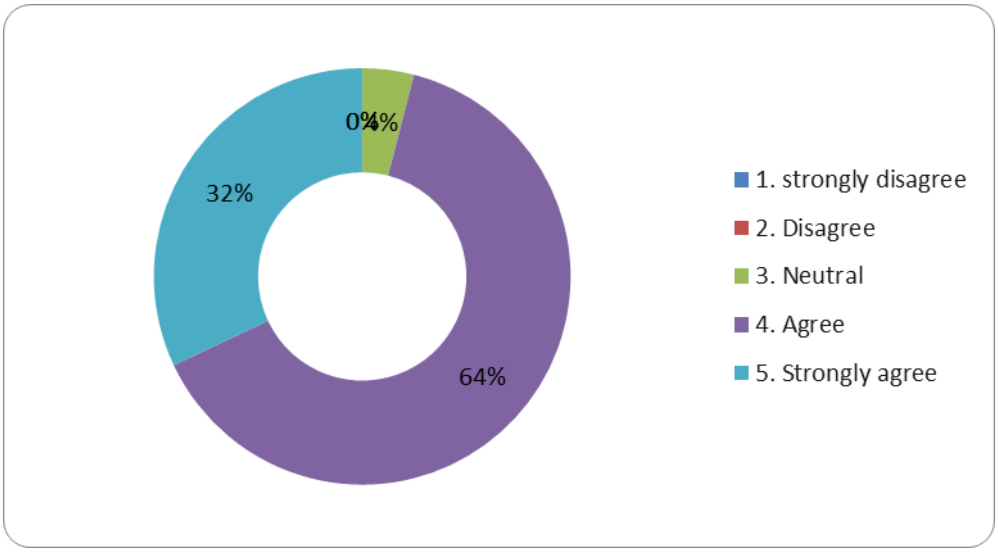
From the data 52% of firms find digital marketing as a relevant option for them when suggested. They find it easier and adaptable way of marketing for them.

Table 4: Importance of customer feedback

Opinions	No of Respondents	Percentage
1. strongly disagree	0	0%
2. Disagree	0	0%
3. Neutral	2	4%
4. Agree	32	64%
5. Strongly agree	16	32%
Total	50	100%

Primary data, questionnaire

Chart 4



Interpretation

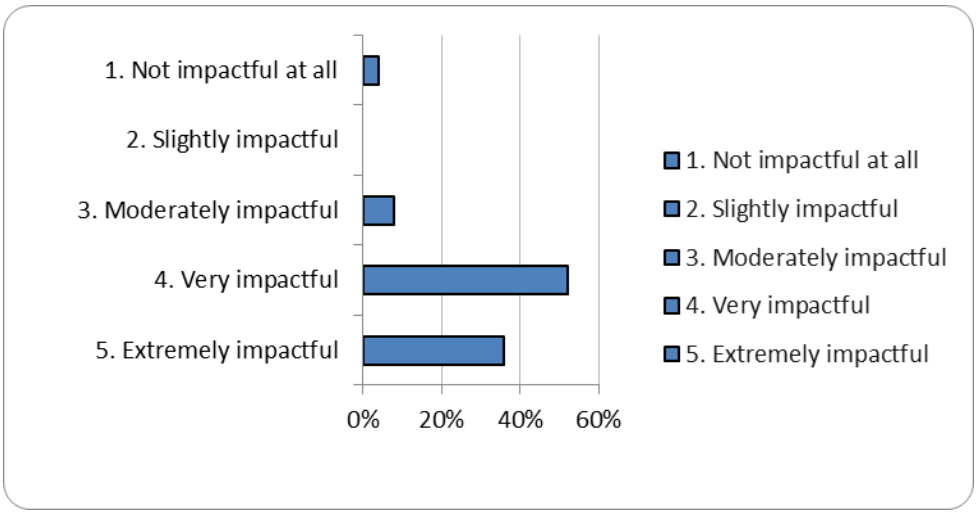
Many companies heavily rely on customer feedback as a critical aspect of their operations. The feedback provided by customers holds significant importance for these firms, influencing their decisions in selecting and refining their product offerings.

Table 5: Importance of referral program (word of mouth)

Opinions	No of Respondents	Percentage
1. Not impactful at all	2	4%
2. Slightly impactful	0	0%
3. Moderately impactful	4	8%
4. Very impactful	26	52%
5. Extremely impactful	18	36%
Total	50	100%

Primary data, questionnaire

Chart 5



Interpretation

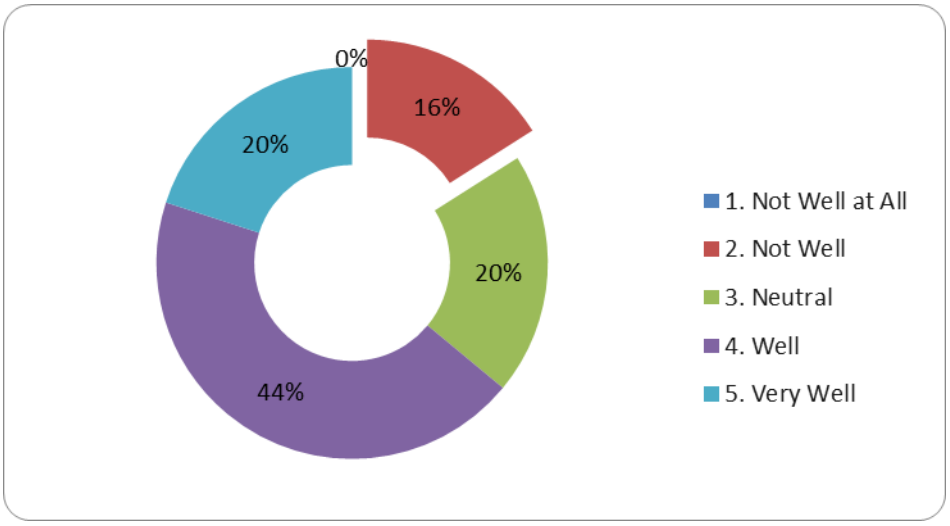
The majority of firms consider referral programs, commonly known as word of mouth, to be crucial marketing activities. They highly value word of mouth as it plays an extremely important role for them.

Table 6: Collaborative sustainable Branding

Opinion	No of Respondents	Percentage
1. Not Well at All	0	0%
2. Not Well	8	16%
3. Neutral	10	20%
4. Well	22	44%
5. Very Well	10	20%
Total	50	100%

Primary data, questionnaire

Chart 6



Interpretation

Majority of firms are interested in sustainable branding if they can find affordable resources. They believe sustainable branding can improve their value. They believe that adopting sustainable branding practices can enhance their overall value and reputation in the market.

Findings

1. Most micro enterprises struggle to allocate funds for costly marketing strategies, investing minimally in marketing efforts.
2. Micro enterprises often lack the knowledge and resources required for extensive networking, including the creation and maintenance of a website.
3. The majority of enterprises rely on word of mouth and referrals as their primary means of publicity. Word of mouth is how they spread information about their business.
4. For the majority of firms, customer feedback is crucial, and they highly value it. They determine their product mix by actively seeking and considering customer feedback.
5. The majority of enterprises discovered that digital marketing, especially social media marketing, can be adopted for their marketing needs. It is considered less expensive and very user-friendly, appealing to a wide range of people across all age groups.
6. Based on the findings, it is evident that social media marketing is the most suitable strategy for firms. It is cost-effective, widely used across all age groups, and facilitates easy collection of customer feedback.
7. Micro enterprises have the opportunity to collaborate with local manufacturers for their products, making it easier to source items and expand their publicity collectively.

Conclusion

The concept of sustainability emphasizes inclusivity, requiring the comprehensive growth of all economic sectors. In rural markets, micro enterprises play a significant role in contributing to economic development and creating employment opportunities. The development of micro enterprises is crucial for achieving sustainable economic growth in a country. Due to the unique characteristics of micro-enterprises, they face distinct and specific challenges.

The study reveals that most micro industries struggle with budgeting for marketing and lack networking opportunities, such as having a website, which may not be effective in rural areas. The recommended strategy for optimal results is digital marketing, with a focus on social media. Social media is an accessible and cost-effective platform for people of all

ages. Utilizing social media marketing tactically can have a significant positive impact on micro enterprises in rural areas. Implementing digital marketing can address both the challenges of a limited budget and a lack of networking resources for micro-enterprises. It is a cost-effective form of marketing that enables easy access to target customers, facilitating efficient communication of feedback between customers and the firm.

Another suggested strategy is collaboration with local manufacturers of sustainable materials, providing easier access and mutual business growth. Collaborating with local manufacturers allows micro-enterprises to access goods without incurring substantial supply chain costs. Such collaboration benefits both the manufacturer and the vendor, fostering mutual marketing interests and creating a symbiotic relationship.

Citation

1. Hidayat, M., Salam, R., Hidayat, Y. S., Sutira, A., &Nugrahanti, T. P. (2022). Sustainable Digital Marketing Strategy in the Perspective of Sustainable Development Goals. Komitmen J. Ilm. Manaj, 3(2), 100-106.
2. Mandal, P. C. (2022). Promotion of Sustainable Marketing: Strategies and Initiatives. International Journal of Social Ecology and Sustainable Development (IJSESD), 13(1), 1-11.
3. Trivedi, K., Trivedi, P., &Goswami, V. (2018). Sustainable marketing strategies: Creating business value by meeting consumer expectation. International Journal ofManagement, Economics and Social Sciences (IJMESS), 7(2), 186-205.
4. Rathore, B. (2017). Aligning Profitability and Environmental Responsibility: A Study on Sustainable Marketing Strategies. Eduzone: International Peer Reviewed/Refereed Multidisciplinary Journal
5. Chaturvedi, V., & Yadav, D. S. (2012). Rural Marketing: An emerging avenue for Encasing Sustainable Marketing Advantage. International Journal of Management Prudence, 4(1), 76.

Reference

- Scholar.google.com
- shodhganga.inflibnet.ac.in
- regionalstudies.org
- Deccanchronicles.com
- worldwidejournals.com

Integrated Floating Agriculture – Aquaculture: A Sustainable Approach for Kerala's Self-Sufficiency and Livelihood Enhancement – A Conceptual Model

Dr. Antony George

Assistant Professor, Department of Commerce, Naipunnya Institute of Management and Information Technology, Thrissur District, Kerala, 680308, India.

Ms. Jissmol Varghese

Assistant Professor, Department of Commerce, Naipunnya Institute of Management and Information Technology, Thrissur District, Kerala, 680308, India.

Abstract:*Floating agriculture is an environment friendly option forincreasing the land foragr iculture.As such, the practice could be sustainable and profitable in developing countries, helping to supplement incomes and to increase food security. Regular, land- based agriculture requires farmland to be protected behind embankments.*

This activity can have detrimental side effects upon the local environment and economy. Floating agriculture can be conducted without land.The procedure can even contribute toward maintaining healthy wetlands which have coastal defence functions and also support a wide range of biodiversity. The practice is already widely applied in some countries such as Bangladesh and the uptake of the technology is already increasing due to its sustainable positive features. Results shows that adoption of this system is possible as a strategy to increase productivity or to raise livelihood and food security among poor people wherever no access to land or productions inputs are available. It excludes irrigation tasks , better pest control than conventional farming and productivity in flood prone areas makes floating an interesting option to reduce the impact of climate change. The cost-free organic fertilization in aquaculture water could sensitively increase farm productivity by improving both fish and vegetable production. The possibility to develop agriculture on water bodies would undoubtedly open up opportunities to raise the income, livelihood and food security of people in Kerala.

Keywords: *Floating agriculture – aquaculture, Sustainability, Self-sufficiency, livelihood enhancement, food security, biodiversity*

INTRODUCTION

Kerala is a state on India‘s tropical Malabar coast which has nearly 600km of Arabian sea shoreline. It is known for its palm-lined beaches and backwaters, a network of canals. Kerala is topographically and ecologically diverse, consisting of coastlands, wetlands and hills, Western Ghats etc. Agriculture in Kerala is now declining due to the changed lifestyle and mind-set of the people. Kerala relies heavily on other states for food grains even though the state is abundantly blessed with resources to cater the needs of its own people. From grains, fruits, vegetables to other food essentials, Kerala‘s consumerist society is deeply a dependent one.

Due to the dependence on other states for food grains, sometimes Kerala used to faceshortage of food products which leads to price rice and consumer woes. During the lockdown as a part of the world pandemic Covid19, Kerala faced the situations whereKarnataka closed its borders with the Kasargod district of Kerala as it was a hotspot. Kerala have enough food stocks available for now and is in a comfortable situation. However, if thecurrent circumstances do not continue for long, the state need to start preparing for the future and would need big interventions in the agriculture sector. Kerala is also facing a difficulty in producing the agricultural products due to the frequent flood and climate changes which has taken place over the last 3 years. Due to this disruption also farmers found it difficult and not profitable to continue the production. The idea to promote self-sufficiency should be convenient and less affected by the climatic changes and thereby provide a better standard of living to the farmers. So, to become self-sufficient we can adopt integrated floating agriculture and aquaculture.

Review of Literature

This growing system is seen today as a strategy to diversify production in common property wetlands and to cope with climate change effects wherever flooding makes land unavailable for agriculture for long periods (Parvej, 2007). In Asia, such systems are mainly made with water weeds piled together to add buoyancy and left decaying for a few weeks to make them a fertile support for plants (Haq et al., 2004; Parvej, 2007). Rafts were loaded with compost or manure as the top layer, which was an ideal substrate for seedlings, increased raft nutrient pools, and reduced evaporation (Haq et al, 2004; Haq et al., 2005; Islam and Atkins, 2007). The nutrient content of some of these floating beds showed ammonia levels between 60 to 282 ppm against a reference value of 150 ppm of nitrogen for good-quality vegetable production (Islam and Atkins, 2007). Potassium was in excess or at optimal levels while phosphorus, manganese, and iron concentrations were low. Organic matter levels were quite high with values ranging from 20.7% to 42.8% and pH from 6.9 to 7.4 (Islam and Atkins, 2007). Floating agriculture in integrated agriculture aquaculture systems (IAAS) can support the nutrient balance of pond water, where chemical or natural fertilization occurs to improve primary production (Diana et al., 1997). Leaching of nutrients from organic matter or manure is a cost-free practice among poor smallholders to increase plankton blooming for feeding planktivorous fish and increase pond yields (Prein, 2002). Furthermore, plant production in aquaculture water can be used as a bioremediation tool to reduce high nitrogen levels in more intensive aquaculture operations, as in the case of aquaponics (soilless plant production on aquaculture water) (Rakocy and Hargreaves, 1993).

In addition, the cost-free organic fertilization in aquaculture water could sensitively increase farm productivity by improving both fish and vegetable production. IAAS in Africa has proved that farmers who own ponds are more resilient to drought conditions and can diversify production (Prein and Ahmed, 2000). Integration of agriculture with ponds is a good strategy in Asia to raise livelihood during critical seasons, improve household fish consumption, and open market access to farmers (Prein and Ahmed, 2000; Prein, 2002). Impact indicators on income and productivity show that ponds can sustainably double farm incomes (Dey et al. 2007) and grant better life standards.

Need for the Study

Statistics show that Kerala has huge amount of waterlogged areas especially in the coastal region. This study makes an effort to create sustainable food security by efficiently and effectively using water-logged areas in Kerala. The present integrated farming systems are the following which can be used in own land.

- Rice-fish integrated system
- Live stock fish system
    - Cattle-fish system
    - Pig-fish system
    - Poultry-fish system
    - Duck-fish system

  Horticulture-fish system

These systems do not take into consideration effective and efficient use of thousands of hectares of naturally water-logged areas in Kerala. Floating agriculture is used in some parts of Asia and Floating aquaculture in some parts of Asia and Europe, but not an integrated one. This study aims to provide a conceptual idea of integrated floating agriculture-aquaculture which can be helpful for the proper utilisation of water-logged areas.

Objectives of the study

- How floating agriculture can address the issue of food security in Kerala
- Investigate the environmental impact of floating agriculture and how it compares to traditional farming methods.
- Examine the economic feasibility of implementing floating agriculture in different regions.
- How the water-logged areas in Kerala can be made useful for sustainable food production.

Wetland

The major wetland types are River/Stream (65162 ha), Lagoons (38442 ha), Reservoirs (26167 ha), and waterlogged (20305 ha). Compared to coastal land, the highland and middle land hold very few wetlands. The state consists of 160.6 thousand hectares (ha) of wetlands

i.e. 4.13 percent of the state. There are a total of 4,354 wetlands of which 2,592 are mainly wetlands with areas less than2.25 ha each. The rest of the 1.762 wetlands are divided into two types- inland and coastal. Kerala has 169 natural coastal wetlands with a total area of 40.9 thousand ha. There are 1,593 inland wetlands with a total area of 117.1 thousand ha.

FLOATING AGRICULTURE

For more than 20 years, floating agriculture has shown to be a profitable farming method. Bangladesh has advocated for its application in a number of areas to enhance food security, offer substitute means of subsistence, lower the risk of disasters, and prepare for climate change. Mesoamerica and Southeast Asia have been using this technique for thousands of years; it predates modern agriculture. Farmers can cultivate crops in flooded locations where typical land use is impractical thanks to floating agriculture. The method entails long-term food production in places flooded by water, with the main goal being adaptation to increasingor longer flooding. Compost from decaying plant beds is used in this approach to supportcrop growth. In locations that are flooded, these beds have the ability to float on the water's surface, forming pockets of arable land.

Floating agriculture is a way of producing food in areas that are water logged for a long period. It is mainly aimed at adapting to increased or prolonged flooding.

System employs beds of rotting vegetation that act as compost for crop growth. The beds are able to float on the surface of the water, thus creating areas agricultural land in a water logged area. Scientifically floating agriculture can be referred to as hydroponics.

Floating agriculture is reasonably widespread in Bangladesh, where agricultural land is inundated for extended periods during the monsoon season (APEIS & RIPSO 2004).

AQUACULTURE

Aquaculture refers to the practice of farming aquatic organisms, such as fish, mollusks, crustaceans, and aquatic plants. Among these, fish farming is the most widely adoptedmethod, wherein fish are raised commercially in tanks, fish ponds, or ocean enclosures, primarily for consumption. The state of Kerala boasts abundant freshwater resources that are well-suited for aquaculture.

INTEGRATED FLOATING AGRICULTURE – AQUACULTURE

The most effective strategies for enhancing the productivity of small-scale farming in rural areas with limited resources.

When a farmer diversifies production by combining livestock, fish, tree, crops, and vegetables, farm production is steady and efficient in terms of resource consumption and environmental conservation.

Floating agriculture-aquaculture is the integration of agricultural farming and fish farming in the water-logged areas, where land availability is low. In this concept floating agricultural beds are made with water hyacinths, bamboo, Cow-dunk, and dirt/sand. Vegetables areplanted on the surface of water using these floating beds and fishes are grown beneath the water.

IMPLEMENTATION

Floating agriculture usually consists of a layer of water hyacinth, straw, or rice stubble floating on the surface, to which upper layers of small, rapidly decomposing water worts are added. These water worts provide excellent manure (APEIS & RIPSO 2004). Bamboo is usedto reinforce the floating raft structure and to secure it in place so that damage from drift or wave movement is prevented. After that, the floating raft can be moved for farming to any submerged area for agricultural purposes.

Gathering water hyacinth is the first stage in creating a floating raft. Bamboo poles cut to the right length for the size of the raft being built are placed over floating water hyacinth, and this mass of plant material is then brought to one bank to be worked on. With the help of stick hooks, more water hyacinth is gathered and added to the bamboo layer. Once the fundamental framework of the raft has been established, the bamboo poles can be extracted. To top off the current structure, additional water hyacinth is added after around seven to ten days. To cover the raft's base, soil, compost, and cow dung are added and seeds can be sown.

Producible crops include lady fingers, brinjal, onions, pumpkins, and green vegetables. The raft will eventually deteriorate and become unusable. At the conclusion of the growing season, the rafts are typically disassembled and turned into compost, and a fresh raft is ready for the following harvest.

Fish can be grown beneath the water when vegetables are planted on the water's surface. By consuming the agricultural waste, fish can thrive, and the fish will also provide enough fertilizer for the floating bed. This will support the expansion and increased production of aquaculture and agriculture, respectively.

WORKING PRINCIPLE

Man-made floating islands of matted organic material are used to replace labour-intensive watering systems and land across freshwater bodies. Plants are anchored and rooted over these materials, and their roots grow into the lake below, providing them with an endless supply of fresh water. This growing method is completely resistant to flooding, as the island rises and falls with the water level.

COST FACTOR

The raw materials used for building floating beds are bamboo poles, water hyacinth, coconut husk, etc are easily available and thus the cost will be very cheap. In aquaculture, the amount required for cages will be 3 lakh which includes 1.8 lakh as operational cost. There is a grant of 40% of unit cost for new units and 20% of operational cost for the already established unit.

ADVANTAGES OF FLOATING AGRICULTURE AND AQUACULTURE

• More food is produced for human consumption;
• The total cultivable area can be increased;
• The area under floating cultivation is more fertile than traditional land;
• No additional fertilizers or manure is needed, unlike in the conventional agricultural system;
• The biomass generated after cultivation can be used as organic fertilizer in the field;
• It conserves the environment;
• It can be used as a shelter for cattle and poultry during floods; and • Fishermen can cultivate crops and fish simultaneously.

Environmental Benefits

• Climate change adaptation technologies
• Floating agriculture is a sustainable and ecologically beneficial form of agriculture
• Reducing mosquito breeding grounds and enhancing conditions for open-water fishing by using water hyacinth, a highly invasive weed with rapid growth rates;

• Avoiding chemical fertilizers and preventing environmental harm by not introducing pollutants into water;
• Using platform residues as organic fertilizer, a practice that reduces pollution from chemical fertilizers

Socio-Economic Benefits

In place of land lost to flooding, it provides an alternative growing space. It is also ten times more productive than conventionally farmed land and doesn't need extra fertilizer or manure.

Farmland that is used for regular land-based agriculture must be reclaimed from estuaries or protected behind embankments.

Agricultural Benefits

• More space for growing vegetables and raising seedlings in wetlands;
• Early production of winter vegetable seedlings;
• Increased availability of vegetables in the surrounding areas;
• Crops require less time to mature when grown on floating platforms;
• Water hyacinth contains prime nutrients like nitrogen, phosphorus, and potassium that are comparable to those found in cow dung.

CONCLUSION

An environmentally friendly way to expand the amount of land used for agriculture is through floating agriculture. Because of this, the method may be profitable and sustainable in poor nations, contributing to increased food security and revenue augmentation. Farmland needs to be sheltered by embankments in order to practice regular, land-based agriculture. There may be negative side effects from this activity on the local economy and ecology. It is possible to carry out floating agriculture without any land. Even better, the process can help preserve healthy wetlands that support a diverse array of wildlife and serve as a kind of coastal defence.

In certain nations, like Bangladesh, the practice is already extensively used, and because of the technology's long-term advantages, adoption of the system is already rising. The findings indicate that this approach can be adopted as a means of raising food security and livelihood standards for the impoverished or increasing productivity in areas where land or production

inputs are unavailable. Floating farming is an intriguing way to lessen the effects of climate change because it eliminates the need for irrigation, has superior pest management than conventional farming, and is productive in locations that are vulnerable to flooding. Free organic fertilization in aquaculture water has the potential to improve vegetable and fish yields while also subtly raising farm output. The potential for agriculture to grow on water bodies would surely present chances to improve the food security, livelihood, and income of Kerala's impoverished and landless population.

Floating agriculture showed competitive advantages over soil-based agriculture. Improved tolerance to salt, easier management that excludes irrigation tasks, better pest control than conventional farming, and productivity in flood-prone areas make floating agriculture an interesting option to reduce the impact of climate change. The possibility of developing agriculture on water bodies would undoubtedly open up opportunities to raise farm income, livelihood, and food security for poor and landless people who can benefit from locally available materials and by-products to run sustainable farming.

This technology has made it possible to ensure nutrition by producing food. Along with that, food is within the reach of people. If the modern technology of floating agriculture is expanded, it will be possible to ensure the nutrition of the common people by increasing the food production of the state.

REFERENCES

1. Adams, R. E.W. 2005. Prehistoric Mesoamerica. University of Oklahoma press, Norman, OK, USA. 544 pp
2. Dey, M.M., Kambewa, P., Prein, M., Jamu, D., Paraguas, F.J., Briones, R.M. and Pemsl, D.E. 2007. Impact of the Development and Dissemination of Integrated AquacultureAgriculture in Malawi. In: Waibel, Zilberman (eds). International Research on Natural Resource Management: Advances in Impact Assessment. FAO-CABI. 270 pp
3. Evans, L. 2006. Salinity tolerance in irrigated crops. Agriculture. NSW Dep. of Primary Industries.www.dpi.nsw.gov.au/agriculture/resources/soils/salinity/crops/tolerance-irrigated
4. Haq, R.A.H.M., Ghosal, T.K. and Ghosh, P. 2004. Cultivating Wetlands in Bangladesh. Leisa India, Magazine on Low External Input Sustainable Agriculture 6:4. http://india.leisa.info/index.php?url=article-details.tpl&p[_id]=78011

5. Haq, R.A.H.M., Ghosal, T.K. and Aminul Islam, M. 2005. Wise Use of Wetland for Sustainable Livelihood Through Participatory Approach: A Case of Adapting to Climate Change. Asian Wetland Symposium (AWS) 2005 - Innovative Approach to Sustainable Livelihood. Bhubaneswar, India February 6-9, 2005.

6. Islam, T. and Atkins, P. 2007. Indigenous Floating Cultivation: a Sustainable Agricultural Practice in the Wetlands of Bangladesh. Development in Practice 17:130-136.

7. Parvej, H. 2007. Adapting to Waterlogging Situation Through Promotion of Floating Garden (Hydroponics) - Involving the Affected Community for their Sustainable Livelihood-Security. Project report. ActionAid! Bangladesh, Dhaka, Bangladesh.

8. Prein, M. and Ahmed, M. 2000. Integration of Aquaculture into Smallholder Farming Systems for Improved Food Security and Household Nutrition. Food and Nutrition Bulletin 21:120-125. The United Nations University.

9. Kokkal P, Harinarayanan P, Sabu K K. Wetlands of Kerala. Sengupta M and Dalwani R. (Editors). In: Proceedings of Taal 2007: The 12th World Lake Conference: 2008; pp1889–1893

10. Thomson K T. 2002. Economic and Social Issues of Biodiversity Loss in Cochin Backwaters. Technical Report, Cochin University of Science and Technology, Cochin, pp 51–82.

11. NaliniNayak, Nandakumar D, Amruth M, Unnikrishnan P, Padmanabhan T P. Wetland resources of Northern Kerala: A Case study of Pazhayangadi and Kunhimangalam in Kannur District. Kerala Research Programme on Local Level Development, Centre for Developmental studies, Thiruvananthapuram. 2000. Discussion Paper. 15

12. Kurup B M., Ranjeet K. Integration of freshwater prawn culture with rice farming in Kuttanad, India. Naga, World Fish Cent. 2002; Q. 25 (3–4): 16–19

13. https://www.researchgate.net/publication/261062311_Integrated_Aquaculture_-_Floating_Agriculture_Is_It_a_Valid_Strategy_to_Raise_Livelihood

14. https://www.ctc-n.org/technologies/floating-agricultural-systems

15. https://www.google.com/url?sa=t&source=web&rct=j&url=http://ypcc.eu/wp-content/uploads/2016/02/III-3-3-8.pdf&ved=2ahUKEwiajszYqaLrAhUDxzgGHb1eAjAQFjABegQIDRAG&usg=AOvVaw2jzj9w-6_7Aq7aL6GRFb_Y

16. https://youtu.be/ktzkGqvWnUE

17. https://youtu.be/c5MKlSoubOY

18. https://www.researchgate.net/publication/308928410_Aquaculture_systems

19. "Inventory of Natural Wetlands of Kerala State & Development of an Information System- A Holistic Approach using Remote Sensing & GIS- Part I", Part II,- Project carried out by Kerala State Remote Sensing & Environment Centre Planning (KSREC) with the Financial Assistance by KSCSTE.

TABLE(S) AND FIGURE(S)

Stages of Production

- Step 1 : Floating Bed Preparation

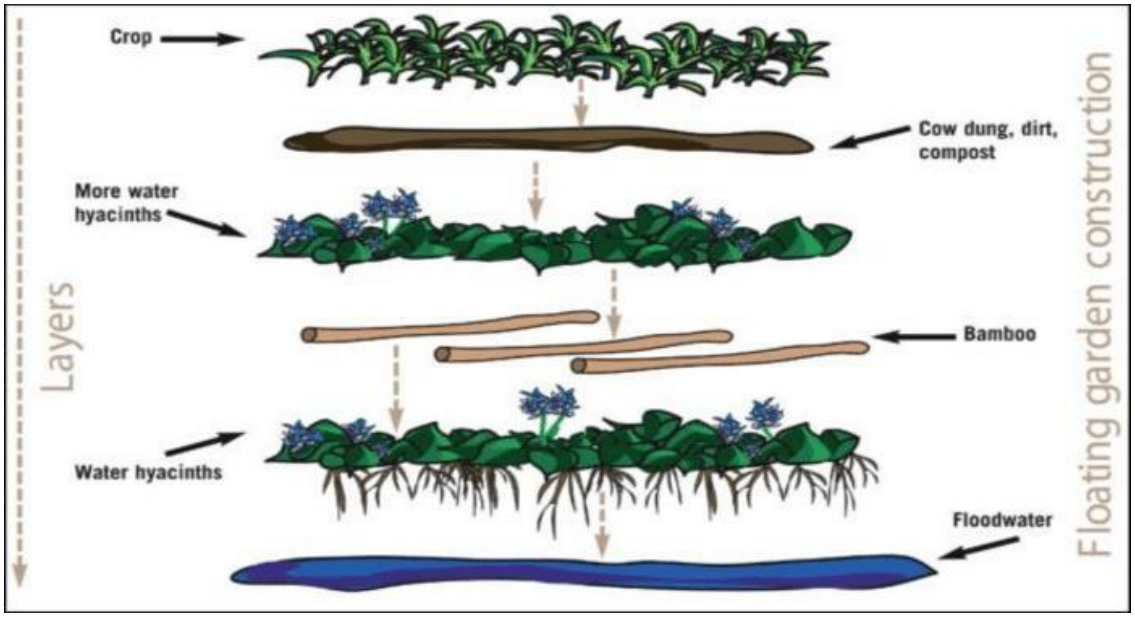


Figure 1: Floating Bed Preparation

- Step 2 : Bed is allowed to rot for 15 – 30 days

- Step 3 : Seeds can be sown and transferred to raft along with Stocking the wet land with Baby Fish

- Step 4 : Vegetables and fish are harvested

Figure 2: Vegetables and fish are harvested

Step 5 : Raft are broken and used as compost

Table1: **Type-wise wetland distribution in Kerala**

	Wetland Category	Number of Wetlands	Total Wetland Area	% of wetland area	Open water	
	Inland Wetlands - Natural				**Post monsoon**	**Pre monsoon**
	Lakes/Ponds	3	2643	1.65	2259	2125
	Riverine wetlands	18	410	0.26	410	410
	Waterlogged	922	20305	12.64	11495	7771
	River/Stream	172	65162	40.58	61853	60338
	Inland Wetlands -Man-made					
	Reservoirs/Barrages	39	26167	16.29	24583	23421
	Tanks/Ponds	439	2435	1.52	1466	530
	Total - Inland	**1593**	**117122**	**72.93**	**102066**	**94595**
	Coastal Wetlands - Natural					
	Lagoons	39	38442	23.94	36819	35796
	Creeks	19	80	0.05	77	77
	Sand/Beach	111	2354	1.47	0	0
	Total - Coastal	**169**	**40876**	**25.45**	**36896**	**35873**
	Sub-Total	**1762**	**157998**	**98.39**	**138962**	**130468**
	Wetlands (<2.25 ha), mainly Tanks	2592	2592	1.61	-	-
	Total	**4354**	**160590**	**100.00**	**138962**	**130468**

Source: *National Wetland Atlas Kerala, MoEF&CC*

A Study on Ornamental Fish Distribution Channels

Ditty Johnson
Research Scholar
Naipunnya Business School, Pongam, Thrissur.

Dr. Antony George
Assistant Professor
Naipunnya Business School, Pongam, Thrissur.

.

Abstract:

The study seeks to contribute valuable insights into the ornamental fish distribution channels and offer recommendations for improvement, innovation, and optimization in the movement of ornamental fish from farm to point of sale. The study is carried out with three survey sites in Kerala that are West Chalakudy, Kottat and Thiruthiparambu coming under the municipality of Chalakudy, district of Thrissur. The study is carried out with three survey sites in Kerala which are West Chalakudy, Kottat and Thiruthiparambu coming under the municipality of Chalakudy district of Thrissur. The study is carried out in the year 2023. The population of this study is all farmers who deal with livebearer ornamental fish species in selected survey sites. The sample size used in this study was 18 farmers who were selected byconvincing sampling. The data used is primary data, collected through a questionnaire. The study on the distribution channel, customer interaction, measures for fish quality, and challenges in the ornamental fish industry has provided valuable insights into the dynamics of this market in the surveyed villages.

Key words: Ornamental Fish, Farmer, Distribution Channels, intermediaries, Customer.

Introduction:

Ornamental fish are in different sizes with very attractive colours and shapes. Due to its characteristics, they are also called living Jewells. Ornamental fish culture is the culture of attractiveness. From ancient times onwards ornamental fish have been kept as a hobby. Still, ornamental fish keeping is the greatest hobby in the world, so it has become the second largest hobby in the world. Food and Agriculture Organization in 1998 said that approximately 16% of Australian, 13% of UK and 10% of American households keep

ornamental fish in their houses. Later based on studies it was proved ornamental fish were kept not only for hobby but also for mental and physical health and well-being, to gain economic benefits arising out of it, for luxury and luck. Several studies revealed that an aquarium tank when it is filled with water and ornamental fish, is very useful to reduce stress.When a person is exhibited in an aquarium for a while, his blood pressure is reduced in all conditions (Clements 2019).

Ornamental fish marketing was established in the international market year 1976 in 28 countries, later it increased to 125 countries (Raja et al., 2019). Europe, South America, North America, Africa, Oceania, Middle East are the major region exporters of ornamental fishes (Raja et al., 2019). The Asian region is the main source of ornamental fish. The top exporting countries are Singapore, Japan, Indonesia, Malaysia, Thailand, the Czech Republic and the Netherlands (Sharma, M. 2020). The top five importing countries are the USA, United Kingdom, Germany, Japan, Netherlands, Singapore and China (Raja et al., 2019).

Ornamental fish farming is providing greater potential for developing countries for economic development. Ornamental fish farming is one of the best choices for the economic upliftment of our country. In other words, India has having rich diversity of species and an ideal climate which is most suitable for fish farming. And availability of low-cost input factors like labour, technical and financial support from fisheries-related government institutions etc also attracts more individuals to this field. In India, export trade is estimated to be about 0.38 million US $ and internal trade is estimated to be about 3.26 million US $. Europe, South America, North America, Africa, Oceania, Middle East are the major region exporters of ornamental fishes (Raja et al., 2019). The Asian region is the main source of ornamental fish. The top exporting countries are Singapore, Japan, Indonesia, Malaysia, Thailand, the Czech Republic and the Netherlands (Sharma, M. 2020). The top five importing countries are the USA, United Kingdom, Germany, Japan, Netherlands, Singapore and China (Raja et al., 2019).In India, the ornamental fish market is mainly dominated by exotic ornamental fish and native ornamental fish. Native ornamental fishes are also called indigenous fish (Sakharan and Ramachandran, 2006). Indigenous fish are treated as ornamental fish if have a single streak or a blotch on their body (Pandey and Mandal, 2017). Indigenous fish are highly demand in the international market whereas exotic ornamental fish have high demand in the domesticmarket.

Kerala is one the hub of ornamental fish sources in India besides West Bengal and Tamil Nadu. As per the Marine Product Export Development Authority of India (MPEDA), Thrissur, Ernakulum, Kottayam, Alappuzha and Thiruvananthapuram are the major districts engaging with ornamental fish farming. Ornamental fish farming is treated avenue for self- employment and provides more employment opportunities with small capital and simple techniques (Jayalal 2016) with the least cost of labour.

Easy accessibility of ornamental fish increases the number of audiences or customers. Distribution channels help a wider audience in making ornamental fish accessible. Better quality control throughout the supply chain is possible through establishing a reliable distribution network. Breeders and suppliers should work closely with distributors for proper care of ornamental fish. Ornamental fish should be given utmost care as it is a living being. To ensure the fish are healthy, and transported in suitable conditions. The prevailing Distribution channels are:

Farmer to Wholesaler to Retailer to Customer

Farmer to Retailer to Customer

Farmer to Customer

Farmer to Marketing Hub to Customer

The complete distribution channel involves the Farmer to the Wholesaler, then to the Retailer, and finally reaching the Customer. In an alternative distribution channel, ornamentalfish move directly from the Farmer to the Retailer, and reaching the customer cutting out the Wholesaler, potentially offering cost efficiencies and faster delivery. A simplified distributionchannel for ornamental fish consists of a direct connection from the Farmer to the Customer, eliminating intermediaries, which could lead to a personal consumer experience. Another distribution channel involves the ornamental fish passing through a Marketing Hub or seller customer meet. It showcases the role of specialized marketing entities in promoting and distributing these unique products.

Review of Literature

Subhra and Ramachandran conducted study on 2011regarding marketing channels in ornamental fish trade in West Bengal. Researcher tried to find out the existing supply chain and other related matters of domestic market in ornamental fish. Data collected from

breeders, retailers and wholesalers through personal interview method and e-mail survey. The study suggest that the State Government can take the initiative for development of this field by providing electricity at subsided rate for breeders, proper transportation protocol and quarantine facility.

YesdhanullaS(2018) studied about marketing channels and price spread of tomato in Chittoor district of Andhra Pradesh. The marketing efficiency was computed by using Acharya's method, which is based on two factors marketing costs and margins.

Rajesh Kumar et al (2017) investigated on marketing and price spread of rice in Hanumangarh district of Rajasthan. This study was taken up with the marketing cost and price spread in different marketing channels. This study reveals that the marketing cost is higher due to the involvement of more middlemen, resulting in a lower share for the producers in the consumer's price.

Objective:

To assess the current distribution channels for ornamental fish in the domestic market.

Methodology:

Now these days the hobby of aquarium keeping is widely spread all over the world. In Kerala also increases the popularity of aquariums. The study is carried out with three survey sites in Kerala which are West Chalakudy, Kottat and Thiruthiparambu coming under the municipality of Chalakudy district of Thrissur. Kottat is a famous place for ornamental fish farming which is identified by the Fisheries Department of Kerala and other places are near Kottat. The study is carried out in the year 2023. The population of this study is all farmers who deal with livebearer ornamental fish species in West Chalakudy, Kottat andThiruthiparambu coming under the municipality of Chalakudy district of Thrissur. The sample size used in this study was 18 farmers who were selected by convenience sampling. The data used is primary data, collected through a questionnaire.

Statement of the Problem

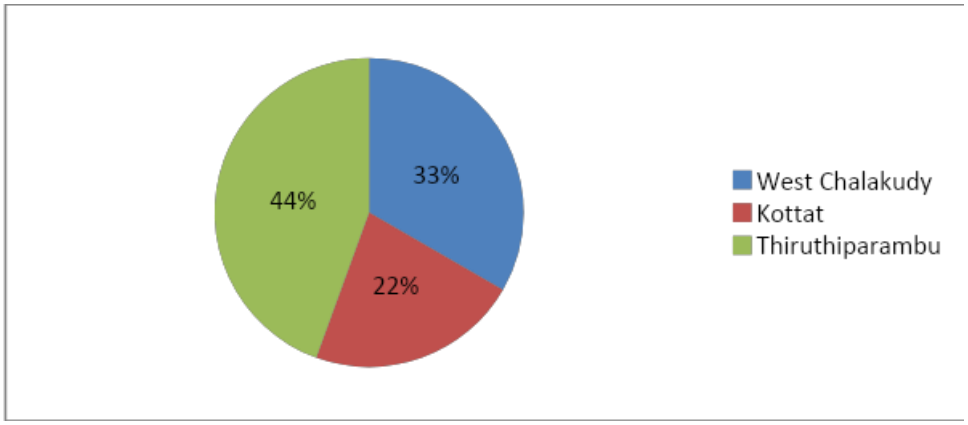
In this research, we aim to assess the current distribution channels based on opinion preference for ornamental fish in the domestic market. The efficiency and effectiveness of distribution channels are subject to various challenges and opportunities for the ornamental fish industry. The survey sites selected for the study are West Chalakudy, Kottat and

Thiruthiparambu coming under the municipality of Chalakudy district of Thrissur. These places are famous among ornamental farmers and stakeholders because most people are involved in ornamental fish farming. This study tried to find out the most preferred marketing channel, Factors that influence the choice of marketing channel, ways of interacting with customers, methods used to ensure quality and health of ornamental fish during movement, faced challenges, and demanded improvements or innovations in ornamental fish marketing. The study seeks to contribute valuable insights into the ornamental fish distribution channels and offer recommendations for improvement, innovation, and optimization in the movement of ornamental fish from farm to point of sale.

Analysis:

1. Area of Operation

The survey sites are West Chalakudy, Kottat and Thiruthiparambu; those places are adjacent areas coming under municipality of Chalakudy district of Thrissur.



Source: Primary Survey (2023)

Fig. 1: Area of Operation

Figure 1 shows that the population of this study is all farmers who deal with live bearer ornamental fish species in aforesaid places. In this study, Thiruthiparambu has the highest number of live bearer ornamental fish farmers (8), West Chalakudy comes next with 6 farmers and Kottat has the fewest numbers of farmers at 4.

2. Preference of marketing channels

The mentioned Marketing channel is referred from previous studies and interviews with farmers. Channel 1, 2 and 3 got from literature review and channel 4 got from interviews with farmers. Here marketing hub means buyer seller meets which is arranged by ornamental fish related agencies with regular interval with the aim of marketing of selling.

Table 1: Preference of marketing channel

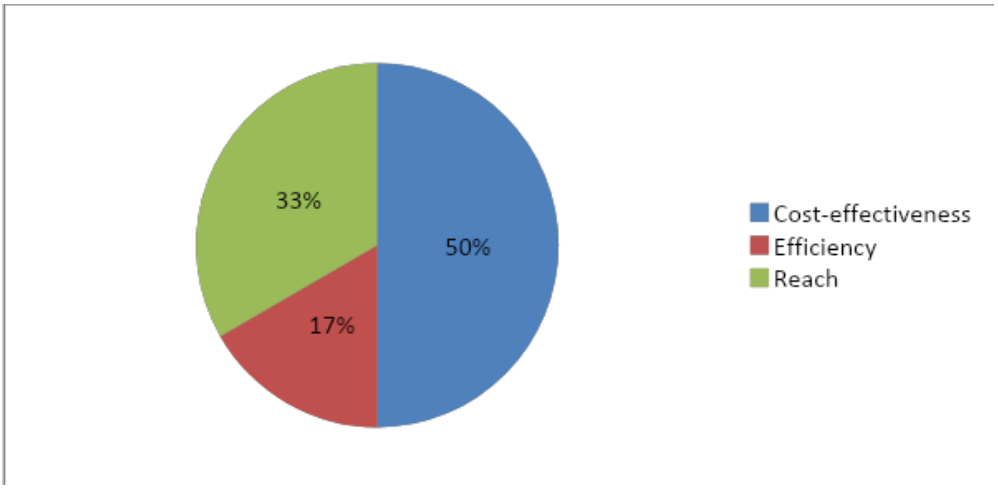
Marketing Channels	Frequency			
	1st Rank	2nd Rank	3rd Rank	4th Rank
Farmer, Wholesaler, Retailer, Consumer(channel 1)	13	3	2	1
Farmer, Retailer, Consumer (channel 2)	0	2	6	10
Farmer, Consumer (channel 3)	0	5	6	7
Farmer, Market Hub, Consumer (channel 4)	5	8	4	0

Source: Primary Survey (2023)

As per table 1, respondents are preferred various ranks for different channels. That means farmers are being aware of the characteristics of customers or situations where each channel is more suitable. So here is diversity in preferences among the channels. Channel number 1(Farmer, Wholesaler, Retailer, Consumer) is the most preferred, securing the 1st rank in 13 responses. The second most preferred Channel number is 4 (Farmer, Market Hub, Consumer) in 8 responses. The remaining channels (Farmer, Retailer, Consumer and Farmer, Consumer) are equally preferred. Identify the characteristics of customers or situations where eachchannel is more suitable.

3. Factors influencing the selection of Marketing Channels.

This is helpful for gaining insights into the priorities and considerations of businesses involved in the ornamental fish industry. Cost-effectiveness refers to the efficiency of achieving goals at the lowest possible cost. Efficiency means movement of ornamental fish from the farm to the customer with minimal waste of time, resources, or effort. Reach refersto the ability to access a wide audience, potentially covering different geographical areas or market segments.



Source: Primary Survey (2023)

Figure 2: Factors influencing the selection of marketing channel

Figure 2 shows the most emphasised factor is cost-effectiveness, with 9 responses. That means they give a significant importance on minimizing costs in their choice of marketing channels. Reach is the second most frequently mentioned factor, with 6 responses. It suggests that businesses consider the ability of marketing channels to reach a wide audience. Efficiency is the remaining factor, with 3 responses. In the opinion of farmers, this factor alsohelpful for optimizing processes and resources in the chosen marketing channels.

4. Marketing strategy

It provides detailed insights into details of customer accessibility, customer experience and market dynamics and trends in the ornamental fish industry. It is provided with two options like direct sales and through intermediaries. Direct sales refer to the process of sellingproducts directly to end customers without the involvement of intermediaries. Through retailers refers to the ornamental fish are sold to customers through third-party retail establishments.

Table 2: Marketing strategy

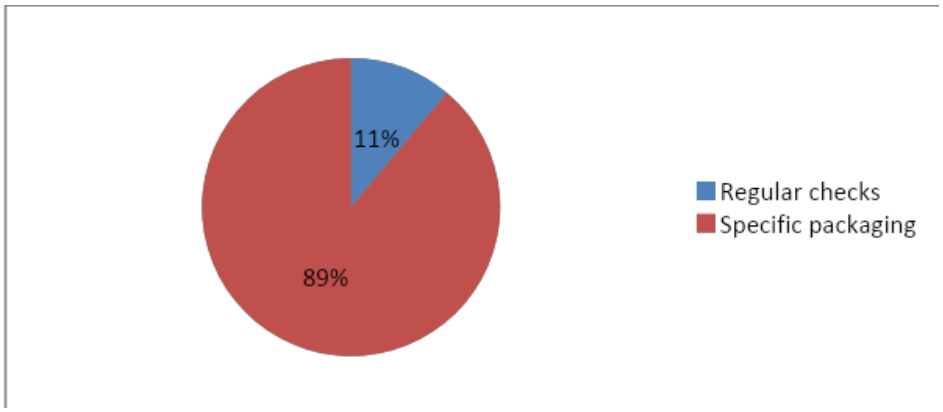
interaction with customers	**Frequency**
Direct Sales	5
Through Intermediaries	13

Source: Primary Survey (2023)

Table 2 shows most responses (13) indicate a preference for interacting with customers through intermediaries. This suggests that businesses in the study commonly utilize sales through different levels of intermediaries. Direct sales received 5 responses, indicating that sales through intermediaries and direct sales are also doing well in this industry.

5. Quality and Health of Ornamental Fish during Distribution

Quality and health of ornamental fish is well-being of ornamental fish which crucial for both ethical and business reasons. Ensuring goodness of ornamental fish is essential to meet customer expectations, adhere to industry standards, and maintain the reputation of the business. The quality and health of ornamental fish Ensure through Regular checks and Specific packaging. A regular check is a systematic process of inspecting and monitoring the health and quality of ornamental fish at various stages of the distribution process. Specific packaging is used to minimize stress and maintain the health during the distribution of the ornamental fish.



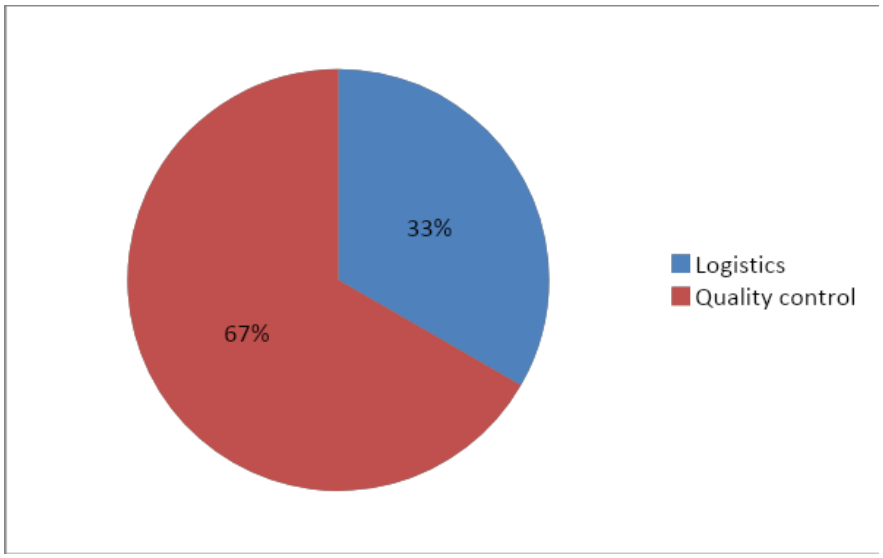
Source: Primary Survey (2023)

Figure 3: Quality and Health of Ornamental Fish during Distribution

Figure 3 shows majority of responses (16) emphasize the use of specific packaging to ensure the quality and health of ornamental fish. It plays a crucial role in maintaining water quality, temperature, oxygenation and minimizing stress during transportation. Regular checks received 2 responses, indicating a less prominent. But businesses are recognizing the importance of ongoing monitoring and checks.

6) Challenges faced

Challenges faced in marketing channels are relevant as they provide a comprehensive understanding of areas for Improvement, guiding strategic decisions; resource allocation etc. Logistics refers to the management of the flow of ornamental fish between the point of origin and the point of sale. The involved challenges are coordinating and optimizing of transportation, warehousing, and inventory management. It may result to delays in shipments, inadequate storage facilities, or inefficiencies in the transportation network. Quality control is a process to ensure certain standards of quality Challenges in quality control may include difficulties in maintaining the health and well-being of the fish throughout the distribution chain.



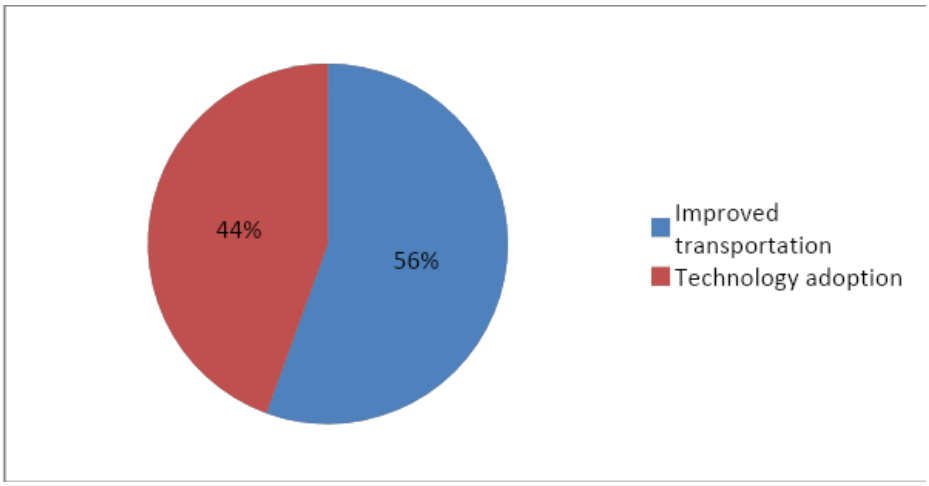
Source: Primary Survey (2023)

Figure 4: Challenges Faced

Figure 4 portrays quality control is the most frequently mentioned challenge, with 12 responses. It suggests that businesses in the ornamental fish industry face difficulties in maintaining consistent and high-quality standards for their products. Logistics is cited as a challenge in 6 responses. The challenges in logistics suggest that businesses face difficulties in managing the transportation and distribution aspects of the ornamental fish supply chain.

7) Improvements or Innovations

Here researchers try to find out challenges in distribution channels of ornamental fish. It provides critical insights to strategic decision-making, industry benchmarking, opportunities for improvement and adaptation to market trends. Improved transportation refers to enhancements and advancements of transporting of ornamental fish from the farmers to customers in more efficient, reliable, and environmentally friendly manner. Technology adoption involves the incorporation and utilization of advanced technologies in the ornamental fish distribution such as use of digital platforms for marketing and sales, adoptionof software for inventory management and order processing, and the integration of monitoring technologies to track the health and conditions of the fish during transportation.



Source: Primary Survey (2023)

Figure 5: Improvements or Innovations

Figure 5 depict the majority of responses (10) highlight the importance of improved transportation in the ornamental fish business. This means that businesses recognize the significance of efficient and reliable transportation methods for the successful operation of the ornamental fish supply chain. Technology adoption received 8 responses, indicating a notable recognition of the role of technology in advancing the ornamental fish business. The emphasis on technology adoption suggests a proactive approach by businesses to leverage technological advancements for various aspects of the ornamental fish industry.

Conclusion:

The study was carried out to assess the current status of distribution channels for ornamental fish in the domestic market. The distribution channel of farmers to wholesalers to retailers to consumers is the complete distribution channel which most preferred one. The factor of cost-effectiveness highly influences the selection of Marketing Channel(s) intending to minimize costs. During the study, most of the sales were done through different levels of intermediaries. So farmers are interacting with customers through intermediaries. Specific packaging is used to ensure the quality and health of ornamental fish during distribution, and quality control is the most frequently mentioned challenge may include difficulties in maintaining the health and well-being of the fish throughout the distribution chain. Most of the farmers noted the importance of efficient and reliable transportation methods for the successful operation of the ornamental fish supply chain. The study on the distribution channel, customer interaction, measures for fish quality, and challenges in the ornamentalfish industry has provided valuable insights into the dynamics of this market in the surveyed villages.

Reference:

1. Kumar, R., Verma, V. K., & Sharma, R. C. (2017). Marketing and Price Spread of Rice in Hanumangarh District of Rajasthan. International Journal of Agriculture Innovations and Research, 5(5), 697-702.
2. Yesdhanulla, S., &Aparna, B. (2018). Marketing channels and price spread of tomato in Chittoor district of Andhra Pradesh. Journal of Pharmacognosy and Phytochemistry, 7(2), 873-876.
3. De, S.S., & Ramachandran, A. (2011). Marketing Channels in Ornamental Fish Trade in West Bengal. Fishery technology, 48.
4. Ramachandran, Alappat. (2011). Marketing Channels in Ornamental Fish Trade in West Bengal.
5. Sharma, M. (2020). Ornamental fish rearing and breeding-a new dimension to aquaculture entrepreneurship in Himachal Pradesh. Int. J. Fish. Aquat. Stud, 8(2),157-162.
6. Raja, K., Aanand, P., Padmavathy, S., &Sampathkumar, J. S. (2019). Present and future market trends of Indian ornamental fish sector. Int J Fish Aquat Stud, 7(2), 6- 15.
7. Pandey, P. K., & Mandal, S. C. (2017, May). Present status, challenges and scope of ornamental fish trade in India. In Conference: Aqua Aquaria India, At Mangalore (pp. 1-10).
8. Clements, H., Valentin, S., Jenkins, N., Rankin, J., Baker, J. S., Gee, N., Snellgrove, D., &Sloman, K. (2019). The effects of interacting with fish in aquariums on human health and well-being: A systematic review. PLoS ONE, 14(7).
9. Joshuaand Immanuel (2014).Aquaculture Development through Agricultural Technology Management Agency:International Journal of Science and Research (IJSR)Volume 3 Issue 10, October 2014.

Unveiling Determinants of Consumer Intent in Green Purchasing

Ms. ChinnuMohanan
Research Scholar
Naipunnya Business School, Pongam, Thrissur.

Dr. Antony George
Assistant Professor
Naipunnya Business School, Pongam, Thrissur.

Abstract:

In the face of escalating environmental concerns, businesses globally are increasingly adopting green marketing strategies. This study delves into the intricate dynamics that shape consumer‘s intention to purchase green products, with a specific focus on the Indian market. The research investigates various factors influencing green purchase behavior, includingpersonal values, motivation, packaging, and information available at the point of sale.

As environmentalism becomes a worldwide phenomenon, the awareness of green marketing practices among Indian consumers has grown significantly. Many manufacturers in India are embracing green marketing, aligning their products and services with environmentally sustainable practices. This study aims to contribute to the understanding of consumer behavior in the context of green purchasing, shedding light on the factors that play a crucial role in shaping consumer‘s intentions.

Key Words: Green Marketing, Consumer Intent, Sustainable Practices, Eco-Friendly Products, Green Purchase Behavior, Green Marketing Practices.

Introduction:

Environmentalism in marketing reflects the increasing awareness and commitment to protecting and enhancing the environment in the realm of business. This entails businesses integrating environmental considerations into their product design and service offerings.Peattie (1995) provides a comprehensive definition, characterizing green marketing as a holistic management process that identifies, anticipates, and satisfies customer and societal needs in a profitable and sustainable manner.

The global emergence of environmentalism has prompted marketing organizations to respond to environmental challenges by adopting green marketing strategies. Green marketing involves planning, developing, and promoting environmentally friendly products or services that meet customer‘s needs without causing negative effects on the environment.

In the face of mounting awareness about global warming, non-biodegradable waste, and pollution, both marketers and consumers are recognizing the importance of transitioning to green products and services. While this shift may appear costly initially, it proves to be crucial, beneficial, and cost-effective in the long run.

The strategy brings multiple benefits, including increased revenue, cost reduction, new product development, risk mitigation, environmental protection, global safety, and enhanced brand reputation. This shift is imperative to address environmental issues that affect human society and the natural atmosphere.

Consumers, particularly those inclined toward green and eco-friendly choices, evaluate the impact of their activities on the market, manufacturing processes, and goods consumption. However, not all consumers exhibit the same degree of greenness, and their willingness to purchase green products varies. Green consumption signifies individual‘s efforts to protect the environment through decisions to purchase, reflecting a social responsibility rather than a legal obligation imposed by governments and societies.

Demographic variables such as age, gender, education level, income, and the presence of children in households contribute to this consumer diversity. Non-demographic variables like willingness to pay, taste, nutritional value, environmental concern, and organic certification also influence consumer decisions when purchasing organic products.

Review of Literature:

Varah et al. (2021) investigated young Indian consumer‘s intention towards green products, proposing an extended Theory of Planned Behavior model with Willingness to Pay Premium and environmental Concern. Their findings revealed a significant relationship between the predictors, emphasizing the influence of these factors on purchase intention, particularly noting the need for a nuanced pricing strategy due to reported price sensitivity among Indian youth.

Rausch & Kopplin, (2021), sustainable clothing purchase intention is highly impacted by attitude towards sustainable clothing and green washing has negative impact on purchase intention. Perceived aesthetic risk also negatively impacts intention and perceived economic risk has no impact on this relationship.

Basha& Lal (2019) explored factors influencing consumer purchase intentions for organic foods in Chennai and Bengaluru, finding that environmentally conscious consumers expressed a willingness to pay a premium for such products. This finding is particularly relevant in the context of India, where agricultural activities hold significance among households, and it gains added importance in cities like Chennai and Bengaluru facing high environmental pollution.

Zaidi et al. (2019), found that green trust acts as a crucial mediator between consumption values and green purchase intention, influenced by functional values such as quality and price, along with significant social values. The moderating impact of green washing perception on the relationship between consumption value and green trust underscores the pivotal role of green trust in driving green purchase intention, emphasizing the need for firms to prioritize efforts in enhancing consumer trust in green products.

Statement of the Problem:

The symbiotic relationship between a country's economic well-being and its growth often comes at the cost of adverse environmental consequences such as global warming, resource depletion, and air pollution. Scholars and practitioners worldwide must proactively address the escalating environmental issues by embracing sustainable development practices to mitigate the detrimental impact of unplanned progress on both the environment and society. In this context, both eco innovation and green purchasing emerge as crucial components in fostering sustainable environmental development.

Eco innovation involves the integration of environmental sustainability throughout the entire lifecycle of goods and services, resulting in reduced resource consumption during production and conferring a competitive advantage (Veleva and Ellen Becker, 2001; Paradowska and Platje, 2015). Conversely, green purchasing revolves around the conscious procurement of environmentally friendly goods while avoiding products that pose harm to the environment and animals (Schaefer and Crane, 2005).

Methodology

The research methodology employed in this study aims to systematically address the management problem of understanding the determinants of consumer intent in green purchasing. The process involves collecting and analyzing data to inform business decisions. The researcher utilizes a comprehensive approach, encompassing research design, questionnaire design, data collection, and statistical tools for data analysis.

Research Design: The chosen research design for this study is descriptive research, specifically utilized to depict the characteristics of the population or phenomenon under investigation. Descriptive research provides a framework to answer key research questions bycollecting and analyzing relevant variables**.**

Sources of Data: Both primary and secondary data sources are employed in this study.

Primary Data was Collected directly from consumers through questionnaires distributed via Google Forms. This method involves interviews, surveys, and experiments, ensuring firsthand information directly from the source**.**

Secondary Data was gathered from journals, websites, articles, and published records, offering additional context and supporting information beyond the primary data collected.

Sample Design: The sample design outlines the specific measurements to be taken, the timing, materials, manner, and the selection of respondents. Key aspects of the sample design include:

Population: Focuses on customers purchasing green products in Ernakulam district, providing a targeted subset for analysis.

Sample Size: With a confidence level of 90%, a sample size of 120 respondents is chosen, allowing for a representative snapshot of the population.

Sampling Technique: Convenience sampling is employed, a non-probability technique where respondents are selected based on their convenient availability. This approach aligns with the study's focus on judgment-based sampling.

Data Collection Method: The data collection method involves distributing questionnaires through Google Forms to customers residing in the Cochin region. Using email and WhatsApp, participants were requested to fill and share the questionnaire within the

Ernakulam District. The data collected is subsequently analyzed using IBM SPSS Statistics software to derive meaningful insights into the determinants of consumer intent in green purchasing**.**

Objectives:

1. Investigate the extent of consumer awareness regarding the adoption of green products in the market.
2. Explore the correlation between customer awareness and satisfaction concerning green products.
3. Identify and analyze the diverse factors influencing customer intentions to engage in the purchase of green products.
4. Assess the level of customer satisfaction and its impact on fostering customer loyalty towards green products**.**

Hypothesis of the Study:

H1. Personal value is positively related to purchase intention
H2. Motivation is positively related to purchase intention
H3. Packaging is positively related to purchase intention
H4. Information at the outlet is positively related to purchase intention
H5. Customer satisfaction is positively related to customer loyalty

Data Analysis: In this study, various statistical methods such as frequency analysis, correlation analysis, and regression analysis were employed to understand consumer behavior towards green products.

1. Frequency Analysis:

1.1 Demographic Overview: In the studied sample of 120 respondents, 51.7% are males, while 48.3% are females. The majority of participants, constituting 77.5%, belong to the age group up to 25 years. Regarding education, a significant portion of respondents are postgraduates (56.7%), followed by graduates (27.5%), and professionals (8.3%). In terms of occupation, a substantial 59.2% identify as students, and 28.3% are employed in the private sector. Concerning monthly income, a noteworthy 72.5% of participants earn up to 20,000 per month.

1.2 Green Product Preferences: The data reveals that a significant majority of respondents, constituting 61.7%, prefer purchasing green products from organized retail outlets. In terms of monthly spending on green products, the majority, accounting for 55%, allocate up to Rs. 1000 per month. When it comes to the frequency of buying green products, 46.7% of participants do so occasionally, while 29.2% make such purchases often.

1.3 Awareness Levels:

The data indicates that 66.7% of respondents possess an average level of awareness about green products. In terms of satisfaction levels, 42.5% express satisfaction, while an additional40.8% report being okay with green products. Regarding the willingness to recommend, a notable 49.2% of participants express a positive inclination to recommend green products to others.

2. Correlation Analysis:

The study revealed several significant relationships among the variables. Firstly, there exists a noteworthy positive correlation between Personal Value and Purchase Intention ($r = 0.636$, $p < 0.01$). Additionally, a low positive correlation was identified between Motivation and Purchase Intention ($r = 0.421$, $p < 0.01$). Moreover, Packaging demonstrated a substantial positive correlation with Purchase Intention ($r = 0.667$, $p < 0.01$), indicating the impact of packaging on consumers' intention to purchase. Information at the Outlet also displayed a significant positive correlation with Purchase Intention ($r = 0.519$, $p < 0.01$), emphasizing the role of in-store information in influencing consumers' purchase intentions. Lastly, there was a significant positive correlation between Satisfaction and Willingness to Recommend ($r = 0.678$, $p < 0.01$), highlighting the connection between customer satisfaction and their likelihood to recommend green products.

Table 2.1 Correlation between Personal value and Purchase Intention

Correlations			
		Personal value	Purchase intention
Personal value	Pearson Correlation	1	.636**
	Sig. (2-tailed)		.000
	N	120	120
Purchase Intention	Pearson Correlation	.636**	1
	Sig. (2-tailed)	.000	
	N	120	120

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

3. Regression Analysis:

3.1 Personal Value and Purchase Intention:

Table 3.1.1 Model Summary of Regression analysis- Personal value and purchase intention

Model	R	R Square	Adjusted R Square	Std. Error Of Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.636[a]	.404	.399	1.83251	.404	80.009	1	118	.000

a. Predictors: (Constant), Personal value

Table 3.1.2 ANOVA[a]of Regression analysis- Personal value and purchase intention

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	268.678	1	268.678	80.009	.000[b]
	Residual	396.254	118	3.358		
Total		664.933	119			

a. Dependent Variable: Purchase intention

b. Predictors: (Constant), Personal value

Table 3.1.3 Coefficients[a] of Regression analysis- Personal value and purchase intention

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.217	.962		4.382	.000
	PV	.650	.073	.636	8.945	.000

a. Dependent Variable: Purchase Intention

The R-square value of 0.404 suggests that 40.4% of the variance in purchase intention can be explained by personal value. The highly significant F-statistic of 80.009 ($p < 0.001$) affirms the overall significance of the model. It is noteworthy that personal value ($\beta = 0.650$, $p < 0.001$) makes a substantial and statistically significant contribution to predicting purchase intention.

3.2 Motivation and Purchase Intention:

The R-square value of 0.177 indicates that 17.7% of the variance in purchase intention can be attributed to motivation. The model demonstrates statistical significance with an F-statistic of 25.441 ($p < 0.001$). Notably, motivation ($\beta = 0.649$, $p < 0.001$) is identified as a significant and positive predictor, signifying its influential role in shaping purchase intention.

3.3 Packagingand Purchase Intention:

The R-square value of 0.444 reveals that packaging accounts for 44.4% of the variance in purchase intention, highlighting its substantial explanatory power. The statistical significance of the model is confirmed by a notable F-statistic of 94.360 ($p < 0.001$). Furthermore,packaging ($\beta = 0.809$, $p < 0.001$) emerges as a highly significant predictor, underscoring its influential role in shaping consumer‘s purchase intentions.

3.4 Information at the Outlet and Purchase Intention:

The R-square value of 0.269 indicates that information at the outlet contributes to 26.9% of the variance in purchase intention, emphasizing its noteworthy explanatory role. The statistical significance of the model is evident with a significant F-statistic of 43.519 ($p < 0.001$). Notably, information at the outlet ($\beta = 0.636$, $p < 0.001$) emerges as a substantial and statistically significant predictor, affirming its impactful influence on shaping consumer‘s purchase intentions.

3.5 Satisfaction and Willingness to Recommend:

The substantial R-square value of 0.459 highlights that a significant portion, specifically 45.9%, of the variability in satisfaction is elucidated by the respondents' willingness to recommend. The statistical significance of the model is underscored by a notable F-statistic of 100.205 ($p < 0.001$), affirming its reliability. A key predictor in this relationship is the willingness to recommend variable ($\beta = 0.699$, $p < 0.001$), emphasizing its considerable and statistically significant role in shaping and enhancing respondents' satisfaction levels.

Key Influencing Factors: Effective Sources of Awareness: Seminars (Mean: 3.49), Magazines (Mean: 3.23), and Retail Outlet Staff (Mean: 3.28) are most effective, Factors Driving Purchase Decision: Quality (Mean: 4.08), Style (Mean: 3.80), and Durability (Mean: 3.77) are top influencers.

This comprehensive analysis provides a nuanced understanding of consumer behavior towards green products. Key takeaways include the significance of personal values, packaging, and information at the outlet in shaping purchase intentions. Motivation plays a role, albeit to a lesser extent. Additionally, satisfaction is strongly linked to the willingness to recommend, emphasizing the importance of post-purchase experiences.

These insights can guide businesses and policymakers in tailoring strategies to enhance consumer awareness, satisfaction, and overall engagement with green products.

Findings:

The study presents a gender distribution with 51.7% females and 48.3% males among the 120 respondents. A significant majority, 77.5%, falls within the age group below 25, emphasizing a youthful demographic. The findings indicate that a considerable portion of the respondents identifies as students, constituting 59.2% of the sample. Moreover, a substantial number of

respondents are graduates and postgraduates, comprising 27.5% and 56.7%, respectively. The study's examination of monthly income reveals that the majority of respondents (72.5%) have a monthly income below 20,000.

In terms of purchasing preferences, 61.7% of respondents express a preference for organized retail outlets when buying green products. Awareness about green products is moderate, with 66.7% of respondents having an average level of awareness. The majority of respondents, 42.5%, express satisfaction with their green product purchases. Furthermore, 49.2% of respondents show a willingness to recommend green products, indicating a positive inclination.

Correlation analyses demonstrate a positive relationship between the independent variables (Personal value, Motivation, Packaging, Information at the outlet) and the dependent variable (purchase intention). Notably, there is a high positive correlation between the level of satisfaction towards green products and the willingness to recommend green products. The regression analysis reinforces these findings, indicating that all independent variables significantly contribute to the dependent variable of purchase intention. Additionally, the regression analysis highlights that the level of satisfaction towards green products plays a significant role in predicting the level of willingness to recommend green products. This comprehensive analysis provides valuable insights into the preferences and behaviors of consumers regarding green products, facilitating a deeper understanding for businesses and policymakers in the realm of sustainable consumption.

Conclusion:

The study aimed to discern the factors influencing customer‘s intentions to purchase Green Products by collecting data on consumer awareness, willingness to recommend, and satisfaction with green products, coupled with factors influencing purchasing behavior. The analysis revealed that personal values, motivation, information at the outlet, and packaging significantly influence buyer‘s purchase intentions. This insight provides a valuable roadmap for green product producers to enhance their sales strategies. The study underscores the pivotal role of organized outlets in influencing green product sales, suggesting a need for concerted efforts to attract customers to these outlets. The findings advocate for businesses

and policymakers to prioritize sustainability initiatives, improve product information transparency, and offer competitive pricing to foster greater adoption of green products. The study concludes that continued research and targeted marketing strategies can amplify the positive impact of eco-friendly products on the environment and society as a whole.

Reference:

[1] P. Varah. et al (2021). ‒Exploring the intention of young Indian consumers towards green products: An extended model of the theory of Planned Behaviour‖. Journal of Sustainable Development, 14(3), 115-129.

[2] Rausch, A., & Kopplin, J. (2021). ‒The impact of attitude towards sustainable clothing and greenwashing on sustainable clothing purchase intention.‖ Sustainability, 13(7), 3624.

[3] Basha, H. A, & Lal, B. (2019). ‒Factors shaping consumer purchase intentions for organic foods: A study in Chennai and Bengaluru‖. International Journal of Applied Research, 5(9),18-25.

[4] Zaidi, F. M., et al. (2019). ‒Green trust as a mediator between consumption values and green purchase intention. Sustainability‖, 11(13), 3541.

[5] Chaudhary, A. (2018). ‒Perceived value and willingness to pay in the purchase of green products in India. Journal of Cleaner Production‖, 172, 1741-1752.

[6] Wang, Y., et al. (2018). ‒The influence of perceived value and perceived trust on purchase intention: A study on remanufactured products. Journal of Cleaner Production‖, 180, 46-54.

[7] Jaiswal, N., & Kant, R. (2018). ‒Green purchase intention influenced by attitude towards green products, environmental concern, and perceived consumer effectiveness‖. Journal of Cleaner Production, 182, 8-17.

[8] Sreen, N., et al. (2018). ‒Customer engagement impacting green purchase intention: The role of attitude, subjective norms, and perceived behavioral control‖. Journal of Cleaner Production, 174, 1630-1639.

[9] Yadav, R., & Pathak, G. S. (2017). ‒Analysis of green consumer behavior in India: A study of predictor variables in the theory of planned behavior‖. Management Decision, 55(3), 560-582.

Comparing Perspectives: Analysing the Gendered Division of Unpaid Care Work through the Resource-Based and Gender-Centred Approaches.

First Author:

*Dev Mathew**

Research Scholar, Postgraduate and Research Department of Economics

Sacred Heart College (Autonomous) Thevara, Kochi, Kerala, India- 682013

ORCID: 0009-0004-7790-6211

Email: devmathew@shcollege.ac.in

Ph: +919744514586

Second Author:

Siby Abraham

Assistant Professor and HOD, Postgraduate and Research Department of Economics

Sacred Heart College (Autonomous) Thevara, Kochi, Kerala, India- 682013

ORCID: 0009-006-9986-3579

Email: sibyabraham@shcollege.ac.in

Ph: +917025775577

Abstract

This paper seeks to examine and contrast two approaches that elucidate the allocation of unpaid household labour and caregiving responsibilities for family members. By employing both the resource-based and gender-centric approaches, the article provides supporting evidence concerning the distribution of unpaid work among men and women. The resource- based approach posits that the relative resources of the wife determine her bargaining power within the household, which in turn enables her to bargain out of household work. Conversely, the gender-centric approach contends that the allocation of unpaid responsibilities within the household follows gendered patterns, with women and men

adhering to traditional gender roles. Although the resource-based approach offers someinsights into the division of unpaid caregiving duties, the gender-centric approach provides a more comprehensive explanation. A compelling theory is the gender deviance neutralisation perspective, suggesting that the influence of the wife's relative resources on reducing housework is limited. When the wife earns more than the husband, she may increase her involvement in household chores to compensate for deviating from traditional gender roles. Using the two perspectives, the paper explores the nuances of the gendered distribution of unpaid work.

Keywords: unpaid care work, gender roles, bargaining, household chores, bargaining

Introduction

Unpaid care work is primarily seen as women‘s work. Unpaid care work includes household maintenance, care of people in the household and voluntary community service [1]. Leaving aside voluntary community services, women contribute a major part to the other two categories- household work and care for family members. Unlike market work, women undertake unpaid care work in the household as obligations without remuneration. Just like paid work, unpaid work requires effort. Also, one could be paid to do these household chores and family care [2]. Evidence shows that the gender gap in unpaid care work exists, although there has been significant improvement recently. The time allocation to different jobs differs from person to person. In the case of women, the pattern of time allocation is quite predictable. This is because, globally, women spend much time on unpaid care work. Ferrant et al. [3] argue that although there are regional differences, on average, women spend about two to ten times that of men on unpaid work. The authors also discuss women's ‗double burden‘, where they must find time for household chores and family care even when employed.

One method by which this gender inequality within the household is addressed and measured is the time use survey. Time use surveys measure people's time allocation to differentactivities, usually in a day. Many countries conduct national time use surveys regularly or gather time use data along with other major surveys. Common methods of collecting time usedata include stylised questionnaires, 24-hour time diaries, and interviews. Time use surveys from different countries provide insights into the regional nuances in time allocation of men and women. Evidence from national time-use statistics across the globe shows that men and

women spend most of their time on personal care and maintenance, followed by social life and leisure [4]. It is interesting that while the next category to which men allocate most of their time is paid work, it is unpaid work for women. This clearly shows the disparity notonly in the workplace but also in the household.

In India, time use surveys were conducted twice; the pilot time use survey was conducted in 1998, and the first national Indian time use survey was conducted in 2019. The pilot survey conducted in 1998 only covered six states in India, while the one conducted in 2019 covered the entire country. While males in India, on average, spend less than three hours a day on unpaid care work in the household, females spend more than seven hours on the same. The gender difference in paid work time is quite concerning as well. While men spend more than seven and a half hours a day on paid work, women spend five and a half hours on the same. Although there is no stark rural-urban difference in the time spent on unpaid care work, there is a significant difference in the paid work time. While urban men spend more than eight anda half hours daily on paid work, rural men spend more than seven hours on the same. Urban women spend around an hour more than rural women on paid work daily. An average urban Indian spends around 1.25 hours more than the average rural Indian [5].

There are two mainstream approaches which seek to explain the allocation of time in the household: the resource-based approach and the gender-centred approach. This paper aims to compare and contrast these two approaches that explain the division of unpaid care work within the household. The article combines evidence from various sources to elucidate which approach better explains the division of unpaid care work within the household.

The Resource-Based Approach

The relative resources and bargaining power perspective assumes that the status of a personin the household determines his/her bargaining power within the household, which in turn is associated with the household division of unpaid care work [6]. The relative resources, which include education, employment, and income, determine the household member‘s status within the household. Using this status, the spouse bargains out of the unpaid work in the household. Typically, men are more educated and employed and earn more than their female counterparts. Based on the relative resources and bargaining principle, we could say that men bring more resources into the household than women. These higher resources increase men‘s power in the household, which helps them bargain out of the tiresome unpaid work. Also, the more resources a wife brings into the household, the more is her bargaining power. Studies

have shown that women with higher education, employment, and earnings do significantly less household work than women with less education, employment, and earnings [7], [8].

The problem with the relative resources perspective is that it does not consider the gender aspect of household labour. The resource-based approach suggests that irrespective of gender, the spouse with relatively fewer resources (education, employment, and income) is left with no choice but to engage in more unpaid work. Therefore, the explanation of the gendered division of household work is that generally, the wife brings fewer resources into the household than the husband [7], [9]. This means the husband has more bargaining power thanhis wife, helping him reduce the time he spends on unpaid work. The wife has less status/power than her husband, leaving her with no choice but to take up more unpaid care work. The resource-based approach does not consider the traditional gender roles prevalent insociety or the gender attitude of spouses. This is a severe drawback of the bargainingperspective.

The Gender-Centred Approach

The gender-centred approach argues that the household is gendered as it is not merely the relative resources which determine the division of unpaid care work but gender roles, gender attitudes, etc. The traditional gender norm views the husband as the household's breadwinner and the wife as the one who takes care of duties within the household. Any deviance from this might be seen as an _abnormal‘ behaviour. In this approach, we look at two theories: the doing gender perspective and the gender deviance neutralisation theory.

The doing gender perspective argues that men and women learn their roles through gendered socialisation and do what society expects them to do [10]. The authors argue that family is heavily gendered. Therefore, the division of unpaid care work in the household is due to husbands and wives performing their expected roles. It does not matter if the wife is more educated or earns more than the husband. The only thing that matters is that the spouses adhere to traditional sex-typed chores, leading to women engaging more in routine householdwork and men engaging more in non-routine house repairs. An interesting theory is the gender deviance neutralisation perspective or the compensatory gender display theory. It holds that women and men conform to traditional gender roles, and any deviance from traditional roles is compensated to reaffirm their gender roles [8]. When the wife outearns herhusband, the couple is deviating from traditional gender roles of men being the breadwinners and women being the carers. So, to comply with the traditional norm, the wife may take up

more unpaid work, and the husband may refuse to do any housework. So, according to this perspective, the bargaining perspective might work unless the husband earns more than his wife. When the wife earns more than her husband, she might engage in more household work, complying with the traditional gender roles.

Which Approach Better Explains the Division of Unpaid Care Work?

The resource-based approach can be elucidated from various studies. Kan and He [11] found that both men‘s and women‘s housework time is determined by their working hours and income relative to their partners. This means that the more time men and women spend in the market, the less time they spend in household work. Also, housework time is negatively associated with their share of contribution towards family income. Yokying et al. [12] iterate that spouses‘ contribution to household work is determined by their relative bargaining position. The authors conclude that an increase in one‘s partner‘s predicted earnings positively affects his/her contribution to household work. This is observed in the case of both men and women. In urban China, the relative resources theory could explain the division of household work [13]. The authors posit that the time the wife spends on housework consistently decreases by approximately eight hours per week as she transitions from being completely dependent on her husband to contributing two-thirds of the couple's total income. This decline continues until it reaches a minimum when she reaches the two-thirds income contribution point. Zhao [14] analysed the effect of relative resources on the division of childcare in China and found supporting evidence for the bargaining perspective. A full-time job status in rural areas helped women bargain out of childcare. Also, men bargain out of childcare as their relative income increases. This is observed only in rural areas and not in urban areas. Contrary to Zhao‘s [14] findings, Kan and He [11] and Yu and Xie [13] observe that the resource-based approach better explains the division of housework in urban areas than in rural areas.

Although Kan and He [11] found evidence for the resource-based approach, they affirmed that in rural areas, there is evidence of _gender display‘. It could be because rural households uphold traditional gender norms. These provide evidence that gender roles and gender ideology have significant roles in determining the division of unpaid work. Quadlin and Doan
[15] inspected the effect of urbanicity on housework and found that men in urban, suburban, and rural areas were identical in the case of female-typed chores. Although urban men presumably hold egalitarian gender attitudes compared to their rural counterparts, men,

regardless of their gender attitudes, do not contribute significantly to female-typed chores. Zhai et al. [16] explain the effect of education on couples‘ time use and find that although education helped narrow the gender gap in unpaid work in urban households, there was no housework-reducing effect in the case of rural households. On the other hand, rural women with equal levels of education compared to their husbands increased the time they spent on unpaid work. This could be a way to compensate for their deviance from traditional gender norms. Although Zhao [14] put forth evidence for the bargaining perspective in rural areas, the case of urban areas is the opposite. Urban men with higher income had more egalitarian gender attitudes compared to the lower income category and engaged more in childcare. Urban men did not bargain out of childcare as income increased.

Which approach better explains the division of unpaid care work is quite tricky. Both approaches explain it to some extent. The resource-based approach might apply to the educated, urban households with higher earnings. In contrast, the gender-centred approach is more apt for the less educated rural households in the low-income category. The compensatory gender display perspective is also evident in studies on urban households. So, the relative resources theory could explain a part of the gender division of unpaid care work, and the gender approach could explain a significant part.

Conclusion

The evidence regarding which approach better explains the division of unpaid care work in the household is mixed. Studies show that both approaches provide explanations for thesame. A significant drawback of the resources-based approach is that it assumes that gender roles and norms have nothing to do with household time allocation. It posits that household time allocation is explained by the relative bargaining position of the husband and wife. The gender disparity in unpaid care work is explained by the fact that women generally bring fewer resources into the household than men. Proponents of the relative resources theory holdthat if women were more educated than men or earned more than men, men would have takenup more of the housework. But this is far from the truth. Evidence suggests that it is not merely the relative resources and bargaining position that determines the division of unpaid care work. It is largely explained by the gender roles prevalent in society. Traditionally, men are typed as breadwinners and women are typed as carers. Men and women behave in accordance with their expected norms. So, the fact that men spend more time in the market and women at home is not merely because of the resources they bring in or their bargaining

position. It is because men and women ‗do gender' or ‗display gender' to affirm their masculinity and femininity.

Evidence has shown that the bargaining perspective explains the division of household work in developed countries [7], [8]. This might be because men and women more or less have equal levels of education, have similar earnings and hold egalitarian gender attitudes. On the other hand, the gender-centred approach is more comprehensive in that it considers people's gender roles and attitudes. The gender-centred approach has indeed failed to explain the division of household labour in some developed countries, but it is more holistic than the resource-based approach.

Acknowledgment

Dev Mathew is a Research Scholar and a recipient of the Junior Research Fellowship of the University Grants Commission, Department of Higher Education, Ministry of Education, Government of India.

References

[1] D. Budlender, *Time Use Studies and Unpaid Care Work*. 2010. doi: 10.4324/9780203846148.

[2] D. Elson, ―Progress of the World's Women 2000,‖ *Unifem*, 2000.

[3] G. Ferrant, L. M. Pesando, and K. Nowacka, ―Unpaid Care Work: The missing link in the analysis of gender gaps in labour outcomes,‖ *OECD Development Centre*, 2014.

[4] J. Charmes, ―Time use across the world: Findings of a world compilation of time use surveys,‖ *UNDP Human Development Report Office*, no. August, 2015.

[5] Government of India, ―Time Use in India-2019,‖ New Delhi, Sep. 2020. Accessed: Jan. 04, 2024. [Online]. Available: https://www.pib.gov.in/PressReleasePage.aspx?PRID=1660028

[6] S. M. Bianchi, M. A. Milkie, L. C. Sayer, and J. P. Robinson, ―Is Anyone Doing the Housework? Trends in the Gender Division of Household Labor,‖ *Social Forces*, vol. 79, no. 1, pp. 191–228, Sep. 2000, doi: 10.1093/SF/79.1.191.

[7] J. Brines, ―Economic dependency, gender, and the division of labor at home,‖ *American Journal of Sociology*, vol. 100, no. 3, 1994, doi: 10.1086/230577.

[8] M. Bittman, P. England, N. Folbre, L. Sayer, and G. Matheson, ―When Does Gender Trump Money? Bargaining and Time in Household Work,‖ *American Journal of Sociology*, vol. 109, no. 1, 2003, doi: 10.1086/378341.

[9] T. N. Greenstein, ―Economic dependence, gender, and the division of labor in the home: A replication and extension,‖ *Journal of Marriage and Family*, vol. 62, no. 2. 2000. doi: 10.1111/j.1741-3737.2000.00322.x.

[10] C. West and D. H. Zimmerman, ―Doing Gender,‖ *Gender & Society*, vol. 1, no. 2, pp. 125–151, Jun. 1987, doi: 10.1177/0891243287001002002.

[11] M. Y. Kan and G. He, ―Resource Bargaining and Gender Display in Housework and Care Work in Modern China,‖ *Chin Sociol Rev*, vol. 50, no. 2, pp. 188–230, Apr. 2018, doi: 10.1080/21620555.2018.1430506.

[12] P. Yokying, B. Sangaroon, T. Sushevagul, and M. S. Floro, ―Work-Life Balance and Time Use: Lessons from Thailand,‖ 2016.

[13] J. Yu and Y. Xie, ―The varying display of ‗gender display,'‖ *Chin Sociol Rev*, vol. 44, no. 2, pp. 5–30, Jan. 2011, doi: 10.2753/CSA2162-0555440201.

[14] S. Zhao, ―Gender in Families: A Comparison of the Gendered Division of Child Care in Rural and Urban China,‖ *Child Youth Care Forum*, vol. 49, no. 4, pp. 511–531, Aug. 2020, doi: 10.1007/s10566-019-09541-5.

[15] N. Quadlin and L. Doan, ―Sex-Typed Chores and the City: Gender, Urbanicity, and Housework,‖ *Gender and Society*, vol. 32, no. 6, pp. 789–813, Dec. 2018, doi: 10.1177/0891243218787758.

[16] F. Zhai, Q. Gao, and X. Wang, ―Education and gender gap in couples' time use: evidence from China,‖ *J Asian Public Policy*, vol. 13, no. 3, pp. 333–352, Sep. 2020, doi: 10.1080/17516234.2019.1632018.

Advancing Towards a Secure and Sustainable Energy Economy- Insights from the State Energy and Climate Index of NITI Aayog

Dr. Sindhu K., Associate Professor, Dept. of Economics,
The Cochin College, Kochi-2.
sindhuk@thecochincollege.edu.in

&

Dr. Santhosh R., Associate Professor, Dept. of Economics
University College, Thiruvananthapuram. The corresponding author can be contacted at
santhoshreco@gmail.com

1. Introduction

Energy stands out as a paramount catalyst for bolstering economies and upholding societal sustenance. Projections indicate a foreseeable surge in global energy consumption and concomitant carbon dioxide (CO2) emissions until 2050, propelled by factors such as burgeoning global population, heightened regional manufacturing activities, and elevated living standards (International Energy Outlook 2023). Current global energy initiatives pivot on the dual objectives of extending access to modern energy universally while facilitating the transition towards cleaner energy sources, ultimately striving to achieve net-zero CO2 emissions by 2050. The United Nations' 2030 Agenda for Sustainable Development duly acknowledges the central role played by energy in effecting transformative change in human lives. In alignment with this recognition, the international community has embraced Sustainable Development Goal 7 (SDG7) as part of the broader set of 17 Sustainable Development Goals. SDG7 is committed to guaranteeing access to energy that is not only affordable and reliable but also sustainable and modern. The specific emphasis of this goal extends beyond mere energy access, advocating for improvements in the provision of clean and safe cooking fuels and technologies. Furthermore, SDG7 underscores the imperative of enhancing energy efficiency,amplifying the utilization of renewable energy sources, and promoting the widespread adoption of sustainable and modern energy solutions. These collective endeavours are geared towards realizing the overarching aspiration of ensuring comprehensive access to such energy services for all by the target year 2030.

2. Energy and Climate Action-The Indian Scenario

India assumes a pivotal role in the contemporary global energy landscape, as revealed by the India Energy Outlook 2021 presented in the International Energy Agency (IEA) Report. The report positions India as the third-largest primary energy consumer on a global scale, forecasting a substantial surge in energy demand in the coming years. Projections further indicate that India is poised to contribute significantly, accounting for 25% of the global energy demand growth over the next two decades. Concurrently, India stands as the third-largest emitter of greenhouse gases globally. In response to these challenges, the energy policy of the nation delineates two overarching objectives: ensuring widespread access to affordable and reliable energy while concurrently mitigating reliance on fossil-based energy through an accelerated transition to cleaner alternatives. A significant articulation of India's commitment to addressing climate change transpired during the 26th session of the Conference of the Parties (COP26) to the United Nations Framework Convention on Climate Change (UNFCCC) in Glasgow. The Prime Minister elucidated India's strategic vision,encapsulated in five nectar elements referred to as the "Panchamrit" of India's climate action. These elements signify a comprehensive approach aimed at navigating the challenges posed by climate change (Ministry of Environment, Forest and Climate Change,(2022).

i) Achieving 500 GW of installed electricity capacity from non-fossil fuel sources by 2030,
ii) Generating 50 per cent of its electricity requirements from renewable energy by 2030.
iii) Reducing the total projected carbon emissions by an additional one billion tonnes by 2030.
iv) Decreasing the carbon intensity of its economy by less than 45 per cent by 2030, and
v) Attaining net-zero emissions by 2070.

India, being the most populous country with substantial projected growth potential, holds an important role in the global pursuit of clean energy transition and climate change mitigation. The nation is steadfast in its commitment to enhancing downstream delivery transmission, fortifying distribution infrastructure, improving the financial standing of distribution companies, ensuring widespread access to clean cooking fuel through efficient and affordable means, and guaranteeing a continuous 24x7 electricity supply. Achieving these objectives demands tailor-made policies that address the unique challenges and opportunities presented by the diverse geographical and economic characteristics of different states. Recognizing the impracticality of a one-size-fits-all approach across states, despite

shared overarching goals, the government advocates for state-specific policies. A nuanced policy framework is deemed essential for each state, accounting for its distinctive characteristics. In pursuit of this, the government has undertaken the task of establishing benchmarks and assigning rankings to states. This stratagem aims to fine-tune the national energy and climate action policy, acknowledging and accommodating the diversities inherent in each state. To operationalize this approach, the NITI Aayog, in collaboration with the Bureau of Energy Efficiency (BEE) and the Alliance for an Energy-Efficient Economy(AEEE), has devised the State Energy & Climate Index (SECI). This index serves as a comprehensive tool to gauge and measure each state's initiatives and progress in improving the energy and climate sector. (State Energy and Climate Index, 2022).The overarching objectives of SECI encompass:

i) Ranking the States based on their efforts towards improving energy access, energy consumption, energy efficiency, and safeguarding the environment;
ii) Helping drive the agenda of affordable, accessible, efficient and clean energy transition at the State level; and
iii) Encouraging healthy competition among the states on different dimensions of energy and climate.

3. Methodology and Data Source

The research utilizes data from the State Energy and Climate Index (SECI) Round 1, released by NITI Ayog in 2022. To assess and compare the performance of States and Union Territories in the domain of energy and climate action, six parameters developed by NITI Aayog are employed. These parameters include Distribution Company‘s performance (DISCOM); Access, Affordability, and Reliability of Energy; Clean Energy initiatives; Energy Efficiency; Environmental Sustainability; and New Initiatives in the energy and Climate Sector. The comprehensive set of parameters encompasses 27 indicators. The composite score of the SECI is determined as the weighted mean of all the scores, with different weights assigned to each parameter, for each State/UT. The overall index score reflects the relative position of States/UTs in the SECI. Notably, DISCOMS, as a critical link in the entire energy value chain, are accorded higher weightage (40%) in the overall index. The remaining parameters, namely 'access, affordability & reliability of energy,' 'clean energy initiatives,' 'energy efficiency,' 'environmental sustainability,' and 'new initiatives,' carry weights of 15%, 15%, 6%, 12%, and 12%, respectively. The distribution of weightage for

each parameter is outlined in Table 1. The indicators are categorized into two groups: progressive indicators, where higher values indicate superior performance, and regressive indicators, where lower values signify better performance. Specifically, indicators 1.1, 1.2, 1.3, 1.4, 1.7, 1.8, 1.9, 2.4, 2.5, 4.1, and 5.1 are classified as regressive indicators (SECI,2022).

The final SECI score is employed to rank the states and Union Territories (UTs). To enhance the comparability of performance in the energy and climate sector, states are categorized into three groups: larger states, smaller states, and Union Territories. The classification is based on the composite SECI score, facilitating a nuanced evaluation. States/UTs falling within the top one-third tier, possessing a composite SECI score greater than or equal to 46, are designated as "forerunners." Those within the range of 36 to 46 composite SECI score are termed as "achievers," representing the middle tier. Units with a composite SECI score below or equal to 36 are labelled as "aspirants," indicating the lower tier of performance. This classification framework provides a comprehensive understanding of the relative positions and achievements of states and UTs in the context of the SECI.

Table 1: SECI Parameters, Indicators & Weightage

SL. NO.	PARAMETERS	INDICATORS	Weightage
1	**DISCOM's Performance (weightage 40)**	1.1. Debt Equity Ratio*	5
		1.2 Aggregate Technical & Commercial Losses *	7
		1.3. Transmission& Distribution Losses*	5
		1.4. Average Cost of Supply-Average Revenue Realised gap*	7
		1.5. Implementation of Time of Day/Time of Use Tariff for Consumers	2.5
		1.6. States Implemented Direct Benefit Transfer	2.5
		1.7. Open Access Surcharge Null *	5
		1.8. Regulatory Assets *	3
		1.9. Complexity of Tariff *	3
2	**Access, Affordability and Reliability of energy (weightage 15)**	2.1. Per capita energy consumption	4
		2.2. Hours of Electricity Supplied (Industry)	1.5
		2.3. Hours of Electricity Supplied (Agriculture)	1.5
		2.4. Cross-Subsidization*	5
		2.5. Life-line electricity and tariff *	3
3	**Clean Energy Initiatives (weightage 15)**	3.1. Clean Cooking Fuel Supply	5
		3.2. Renewable Energy Penetration	5
		3.3.CNG Vehicle Penetration	5
4	**Energy Efficiency (weightage 6)**	4.1. Energy Intensity of Gross State Domestic Product*	2
		4.2. Energy Savings in Commercial & Public Buildings	2
		4.3. Industrial Energy Savings	2
5	**Environmental Sustainability (weightage 12)**	5.1. Emission Intensity of Gross State Domestic Product*	4
		5.2. Utilisation of RE Potential	2
		5.3. Percentage Change in Forest Cover	4
		5.4. Forest Carbon Stock	2
6	**New Initiatives (weightage 12)**	6.1. Electric Vehicle Penetration	4
		6.2. Availability of Charging Infrastructure for Electric Mobility	4
		6.3. Proportion of Consumers with Smart Meters	4

Source: State Energy & Climate Index Round-I, NITI Ayog, 2022

*Regressive indicators

4. Discussion and Results

This section undertakes a comprehensive analysis of diverse performance metrics across states and Union Territories (UTs) within the State Energy and Climate Index (SECI). The objective is to identify achievements and areas requiring improvement across various regions. Table 2, Table 3, and Table 4 provide the final SECI scores and parameter-wise scores for larger states, smaller states, and UTs, respectively. The final scores, presented in the last column of each table, are utilized for ranking states and UTs based on their performance in energy and climate action. The classification includes Front-runners, Achievers, and Aspirants, determined by the final score. An in-depth examination of the final SECI scores for larger states, as outlined in Table 2, highlights significant differentiations. Gujarat leads with a score of 50.1, followed by Kerala and Punjab, securing scores of 49.1and 48.6, respectively. Chhattisgarh registers the lowest score in this analysis. Among the larger states, Gujarat, Kerala, Punjab, Haryana, Uttarakhand, and Maharashtra are designated as Front-runners. States categorized as Achievers encompass Himachal Pradesh (HP), Karnataka, Tamil Nadu, Andhra Pradesh, Uttar Pradesh, West Bengal, and Bihar. The remaining states fall within the Aspirants category. This nuanced breakdown aids in discerning the varying degrees of performance and achievements across states in the realm of energy and climate initiatives.

A scrutiny of the performance of South Indian states, namely Andhra Pradesh, Telangana, Karnataka, Tamil Nadu, and Kerala, reveals noteworthy trends. With respect to the Distribution Company‘s (DISCOM) performance, all states, with the exception of Telangana, have surpassed the national average. In particular, in the Energy Efficiencyparameter, all southern states have outperformed the national average. Tamil Nadu, in particular, stands out with an impressive score of 85.4 in this parameter, surpassing the national average of 29.1. Kerala emerges as a standout performer in the Access, Affordability, and Reliability domain, achieving a commendable score of 69.3. However, the New Initiatives parameter presents a contrasting picture, with Southern states exhibiting suboptimal performance. Only Karnataka has managed to surpass the national average in this segment, indicating a notable disparity in the adoption of new initiatives among the Southern states. This nuanced analysis provides insights into the specific strengths and areas forimprovement within the energy and climate performance of South Indian states.

Despite being a high-performing state, Gujarat exhibits areas that necessitate improvement, particularly in the domains of New Initiatives and Energy Efficiency.

Similarly, Kerala, while being commendable in its overall performance, could benefit from enhancements in the New Initiatives parameter. Notably, Himachal Pradesh, classified as an Achiever, stands out with exemplary performance, securing the highest scores in two parameters: Environmental Sustainability and New Initiatives. However, areas warranting improvement for Himachal Pradesh include Energy Efficiency and the performance of Distribution Companies (DISCOMS). This nuanced analysis underscores the need for targeted interventions in specific areas to further enhance the overall performance of these states.

Table 2: Performance of Large States in SECI Round -1

Rank	States	DISCOM's performance	Access, affordability & reliability	Clean energy initiatives	Energy Efficiency	Environment sustainability	New initiatives	Score
1	Gujarat	72.7 (2)	52.4 (7)	39.2 (2)	40.1 (9)	35.1 (10)	5.5 (12)	50.1
2	Kerala	64.4 (6)	67.3 (1)	21.5 (7)	58 (4)	46.9 (3)	7.7 (9)	49.1
3	Punjab	77.1(1)	46.8 (10)	26.1 (5)	35.1 (12)	37 (8)	2.3 (17)	48.6
4	Haryana	69.8 (3)	53.6 (6)	42.9 (1)	11.7 (18)	33.4 (14)	6.9 (11)	47.9
5	Uttarakhand	61.9 (7)	55.3 (5)	18.5 (9)	50.5 (6)	48.7 (2)	14.7 (4)	46.5
6	Maharashtra	57.7 (13)	51.2 (9)	34 (3)	75.7 (2)	36.2 (9)	10.4 (6)	46
7	Himachal Pradesh	57 (15)	56.3 (4)	14.3 (12)	20.1 (16)	52.1 (1)	38.1 (1)	45.4
8	Karnataka	56.8 (16)	45.5 (13)	27 (4)	57.2 (5)	41.7 (4)	14.5 (5)	43.8
9	Tamil Nadu	57.3 (14)	46.3 (12)	21.7 (6)	85.4 (1)	39.2 (7)	4 (15)	43.4
10	Assam	67.3 (4)	38.3 (19)	4.3 (18)	39 (11)	39.9 (6)	17.6 (3)	42.6

11	Telangana	55 (18)	60.4 (2)	18.55 (8)	64.7 (3)	34.6 (12)	0.4 (19)	41.9
12	Andra Pradesh	65.1 (5)	42.6 (18)	16.9 (10)	40 (10)	35 (11)	0 (20)	41.6
13	Uttar Pradesh	59.9 (9)	37.8 (20)	12.6 (13)	42 (8)	30.9 (16)	27.4 (2)	41
14	West Bengal	55.3 (17)	52 (8)	8.5 (14)	27.7 (13)	40.9 (5)	9 (8)	38.9
15	Bihar	61.3 (8)	45 (15)	4.9 (16)	22.8 (14)	33.7 (13)	7.6 (10)	38.3
16	Odisha	59 (10)	57.4 (3)	4.8 (17)	21.8 (15)	22.6 (18)	0.9 (18)	37.1
17	Rajasthan	49.2 (20)	42.9 (16)	15.5 (11)	44 (7)	31.4 (15)	4.8 (13)	35.4
18	Jharkhand	58.3 (12)	46.5 (11)	2.9 (19)	17.2 (17)	19 (19)	9.3 (7)	35.2
19	Madhya Pradesh	53.7 (19)	42.7 (17)	6.2 (15)	8.3 (19)	24.1 (17)	3.3 (16)	32.6
20	Chhattisgarh	58.4 (11)	45.4 (14)	2.1 (20)	0 (20)	5.8 (20)	4.2 (14)	31.7

Source: State Energy & Climate Index Round-I (2022), NITI Ayog

The analysis of the State Energy and Climate Index (SECI) scores for smaller states and Union Territories (UTs) unveils distinct performance categories and noteworthy achievements. Within the realm of smaller states, Goa and Tripura emerge as Front-runners, showcasing remarkable accomplishments. Goa secures the highest score of 51.4, while Tripura excels in the New Initiatives parameter with an impressive score of 58.7. Manipur attains the Achiever designation, signifying commendable performance, while the remaining smaller states are categorized as Aspirants, indicating areas for potential improvement. An interesting trend among smaller states is evident, with average performance observed in Environmental Sustainability, where scores range from 55 to 40. Similarly, in Access, Affordability, and Reliability, scores fall within the range of 60 to 30. This commonality underscores areas where concerted efforts may be needed to enhance performance across

smaller states, contributing to a more nuanced understanding of their strengths and areas for improvement in the context of energy and climate action.

Table 3: Performance of Small States in SECI Round -1

Rank	States	DISCOM's performance	Access, affordability & reliability	Clean energy initiatives	Energy Efficiency	Environment sustainability	New initiatives	Score
1	Goa	63.4 (1)	59.6 (1)	62.4 (1)	16.6 (7)	43.7 (2)	12.4 (2)	51.4
2	Tripura	57.3 (3)	33.1 (6)	22.9 (2)	31.7 (2)	39.6 (5)	58.7 (1)	45
3	Manipur	57.6 (2)	34.1 (5)	4.7 (7)	22.1 (5)	41.3 (3)	7.3 (3)	36
4	Mizoram	51.7 (4)	39.3 (3)	18.99 (3)	29.7 (3)	38.2 (7)	1.1 (6)	35.9
5	Sikkim	43.2 (6)	37.6 (4)	13.8 (4)	33.3 (1)	25.2 (8)	0.6 (8)	33.3
6	Meghalaya	47.9 (5)	30.9 (8)	1.9 (8)	4 (8)	39.8 (6)	2.8 (5)	29.4
7	Nagaland	35.9 (7)	32.9 (7)	12.2 (5)	26.4 (4)	40 (4)	3.4 (4)	27.9
8	Arunachal Pradesh	31.1 (8)	43.2 (2)	5.8 (6)	19.8 (6)	49 (1)	1.1 (7)	27

Source: State Energy & Climate Index Round-I (2022), NITI Ayog

In the domain of Union Territories (UTs), Dadra and Nagar Haveli (D&N), Daman & Diu (D&D), Chandigarh, Delhi, and Puducherry have been distinguished as Fore-runners, showcasing commendable overall performance. In contrast, Jammu and Kashmir (J&K), Andaman and Nicobar (A&N), and Lakshadweep fall into the category of Aspirants, indicating areas for improvement. Insights into specific parameters highlight notable performance in DISCOM‘s Performance by four UTs, with Delhi being an exception. Thereis a general need for improvement in energy efficiency parameters across all UTs, except for Delhi. Additionally, Chandigarh, D&D/D&N, and Delhi demonstrate outstanding performance in Clean Energy Initiatives, boasting scores of 69.2, 68.6, and 67.6, respectively.It is noteworthy that Chandigarh has surpassed the national average in all parameters, withthe exception of Energy Efficiency. This detailed examination provides valuable insights into the unique strengths and areas for improvement within Union Territories in the context of energy and climate action.

Table 4: Performance of Union Territories in SECI Round -1

Rank	Union Territories	DISCOM's performance	Access, affordability & reliability	Clean energy initiatives	Energy Efficiency	Environment sustainability	New initiatives	Score
1	Chandigarh	65.6 (4)	58.7 (2)	69.2 (1)	16.2 (2)	62.5 (1)	14.1 (3)	55.7
2	Delhi	66.2 (3)	38.3 (5)	67.2 (3)	43.9 (1)	38.6 (5)	49.7 (1)	55.6
3	D&D and D&N	71.5 (1)	60.3 (1)	68.6 (2)	0 (6)	36 (6)	7.9 (4)	53.2
4	Puducherry	67.9 (2)	57.7 (3)	20.3 (6)	0.6 (5)	42.7 (4)	37.9 (2)	48.5
5	Andaman & Nicobar	37.7 (6)	35 (6)	20.6 (5)	1.3 (4)	49.5 (3)	0 (6)	29.4
6	Jammu & Kashmir	31.2 (7)	51.4 (4)	11.6 (7)	9.9 (3)	51.8 (2)	4.5 (5)	29.3
7	Lakshadweep	42.9 (5)	25.9 (7)	33.6 (4)	0 (7)	7.1 (7)	0 (7)	26.9

Source: State Energy & Climate Index Round-I (2022), NITI Ayog

The country-level analysis of the average State Energy & Climate Index (SECI) score and individual parameter scores reveals substantial regional disparities in performance across different facets. Notably, the average score for New Initiatives stands at a modest 11.1, contrasting significantly with the considerably higher average score of 56.8 for Distribution Companies' (DISCOMs) performance. This marked difference underscores a significant gap in the national performance landscape, indicating a pressing need for substantial improvements at the state and Union Territory (UT) levels. The observed variation between the national average score and the lowest scores among states and UTs further accentuates theneed for enhanced efforts. Particularly in parameters such as Clean Energy Initiatives, Energy Efficiency, and New Initiatives, notable advancements are essential for achieving a more balanced and sustainable energy and climate framework nationwide. This comprehensive analysis highlights key areas that require focused attention to bridge regional disparities and foster a more cohesive and effective national approach to energy and climate action.

Table 5: Average score, Highest score and Lowest score SECI- All India Comparison

	Average Score	Highest Score	Lowest Score
SECI score	40.6	55.7 (Chandigarh)	26.9 (Lakshadweep)
DISCOMS's performance	56.8	77.1 (Punjab)	31.1 (Arunachal Pradesh)
Access, Affordability & Reliability	46.4	67.3 (Kerala)	25.9 (Lakshadweep)
Clean Energy Initiatives	22.2	69.2 (Chandigarh)	1.9 (Meghalaya)
Energy Efficiency	29.1	85.4 (Tamil Nadu)	0.0 (Lakshadweep)
Environmental Sustainability	37.7	62.5 (Chandigarh)	5.8 (Chhattisgarh)
New Initiatives	11.1	58.7 (Tripura)	0.0 (Andhra Pradesh, A&N))

Source: State Energy & Climate Index Round-I (2022), NITI Ayog

5. Conclusion

The State Energy & Climate Index (SECI) has proven to be an effective tool in delineating the strengths and weaknesses of states and Union Territories (UTs) concerning diverse parameters representative of energy and climate action. One of its notable achievements is the documentation of best practices among peers, fostering a platform for states to draw inspiration from the successes of others. The SECI highlights critical areas for improvement, including the imperative for states to enhance their distribution infrastructure and systems, given prevalent challenges such as high Aggregate Technical and Commercial (AT&C) losses and intricate tariff structures. Noteworthy areas for enhancement encompass elevating per capita energy consumption, augmenting Compressed Natural Gas (CNG) vehicle penetration, refining last-mile connectivity, and ensuring the availability of clean energy sources for cooking. The report underscores the substantial distance yet to be covered by most states and UTs in terms of the Energy Efficiency parameter, stressing the importanceof achieving low energy intensity and emission intensity for the realization of an energy- efficient economy. Furthermore, the SECI identifies that half of the states fall below the national average in terms of environmental sustainability and New Initiatives, emphasizing

the necessity for concerted efforts and shared responsibility between central and state governments to facilitate effective energy transition and realize India's climate action objectives

References

1. Bhatia, Mikul; Angelou, Niki : ‒Beyond Connections: Energy Access Redefined.‖ *ESMAP Technical Report*; 008/15, World Bank, Washington, DC. (2015)
2. Chateau, Jean et al.: ‗A Framework for Climate Change Mitigation in India', *IMF Working Paper*: WP/23/218, (2023)
3. Energy Statistics India: Ministry of Statistics and Programme Implementation, Government of India (2023)https://www.mospi.gov.in/publication/energy-statistics-india-2023
4. India's Stand at COP-26, Ministry of Environment, Forest and Climate Change, PIB https://pib.gov.in/PressReleasePage.aspx?PRID=1795071 (2022).
5. India Energy Outlook: The International Energy Agency (IEA) Report, (2021)
6. State Energy and Climate Index: Round-I : NITI Aayog, ISBN: 978-81-953811-9-7(2022)
7. The 17 Goals,*United Nations Sustainable Development Goals,*Department of Economic and Social Affairs, Sustainable Development, https://sdgs.un.org/goals (2023)

Towards Sustainable Manufacturing: Integrating Lean Practices for Industrial Transformation

Syama S S
Research Scholar
PG and Research Department of Commerce
Government Arts College, Thycaud, Thiruvananthapuram

Address: KarthikaBhavan, KRA-B-144,
Kulasekharam, Kodunganoor P.O., Vattiyoorkavu,
Pin:695013, Thiruvananthapuram, Kerala
Email ID: syamalekshmi1998@gmail.com
Mobile No: 9946505376

Abstract

As industries navigate the complex landscape of global challenges, the imperative to achieve sustainable manufacturing practices has become paramount. This research article explores the synergies between lean manufacturing and Sustainable Development to propel industrial transformation towards a more environmentally conscious future. This review article provides a comprehensive examination of the current state of knowledge in lean and sustainable manufacturing and offer a nuanced understanding on the integration of lean practices as a catalyst for sustainable manufacturing. This research advocate to adopt ―Sustainable Lean Manufacturing‖ approach in the industries and recommend government to make policies in this regard. The findings underscore the need for more researches with empirical studies to prove the capabilities of Sustainable Lean Manufacturing approach. This research serves as a valuable resource for researchers, businesses, practitioners, and policymakers for seeking to forge a path towards sustainable manufacturing by embracing lean principles and aligning their practices with global sustainability objectives.

Keywords: Sustainable manufacturing, Lean Manufacturing, Sustainable Development Goals (SDGs), Industrial Transformation, Sustainable Lean Manufacturing

Introduction

The concept of "Preserving nature for future generations" is becoming increasingly prominent today, driven by a variety of environmental concerns such as climate change, global

warming, ozone depletion, and the decline of biodiversity. And discussions regarding sustainability are actively taking place. The United Nations has introduced 17 Sustainable Development Goals (SDGs) as part of the 2030 Agenda for Sustainable Development, emphasizing sustainable development as a fundamental principle for both global collaboration and national progress [13]. Nations worldwide are making concerted efforts to achieve these sustainability goals.

Lean is a principle highlighting the creation of value and strives to eliminate non-value-added tasks from manufacturing processes to enhance quality and productivity, ultimately resulting in customer satisfaction [4]. Core principles of lean thinking, continuous improvement, and empowering employees serve to minimize waste and open avenues for establishing sustainable green industries [5]. Past studies indicate the feasibility of integrating Leanmanufacturing, a globally acknowledged manufacturing and management philosophy withthe objective of achieving sustainable development.

The objective of this study is to depict the connection between two manufacturing approaches, namely sustainable and lean. This article aims to offer a comprehensive outlineof the future connections between lean manufacturing and sustainable manufacturing.

Research Methodology

The study's goal is to explore the integration of lean manufacturing practices with the concept of sustainable manufacturing for the purpose of fostering industrial transformation. This descriptive research is conducted through a review of scholarly articles and web-based resources.

Discussion

In light of ongoing global climate change and related environmental issues, industrial enterprises must adopt strategies and action plans facilitating a shift toward sustainable manufacturing [5]. To gain a competitive edge in terms of sustainable growth, organizations and industrial enterprises are increasingly compelled by the competitive landscape to scrutinize, restructure, and redirect their operations [5]. The imperative of transitioning to Sustainable Manufacturing is crucial at present, and industries, particularly in manufacturing, need to prioritize it as a key objective.

Achieving sustainability in the manufacturing sector necessitates a comprehensive overhaul, a task that poses significant challenges. Industries, serving as the backbone of a nation, draw

resources from society and reciprocate by delivering value-added products and services. They play a pivotal role in the economic and social well-being of a country, underscoring the industries' responsibility to contribute towards the welfare of future generations. Embracing sustainable manufacturing or production practices emerges as a crucial pathway to realize sustainability goals within the manufacturing sector.

Lean, a renowned manufacturing paradigm originating from Japan, is a recognized stepping stone towards sustainability. Traditional lean methodologies concentrate on enhancing productivity, efficiency, revenue generation, customer value creation, and reducing various forms of waste, such as unnecessary inventory, motion, overproduction, processing, waiting, transportation, and defects [1]. In contrast, sustainable manufacturing aims to curtail the adverse environmental impacts of manufacturing operations [6]. Recognizing the synergies between Lean and environmental initiatives is widespread in the industry [12]. Combining Lean with the sustainable manufacturing paradigm positions Lean as a facilitator in achieving sustainability objectives.

The core focus of Lean manufacturing is waste elimination within the production system. Throughout the production process, various forms of waste emerge, categorized under seven heads in the Lean methodology:

1. Unnecessary Transportation
2. Excess Inventory
3. Unnecessary Motion
4. Over Production
5. Over Processing
6. Wait time
7. Defects

Inefficient factory layouts, intricate material handling systems, and large batch sizes contribute to unnecessary transportation, leading to fuel wastage, air pollution, and increased costs [9]. Accumulation of inventory, including raw materials, work in process (WIP), and finished goods, ties up working capital and occupies valuable storage space, often resulting from inaccurate production planning systems. This surplus inventory may be lost due to wear and tear or damage, representing a waste of precious natural resources.

Unnecessary motion occurs when employees encounter difficulties reaching production facilities, searching for materials and tools, and working in unfavourable environments. Employing ergonomic design, which creates a safe, comfortable, and efficient work environment tailored to the needs of the workers, helps minimize motion waste [14]. A well-designed ergonomic layout positively impacts quality, productivity, and the overall quality of work life for employees.

Overproduction, considered the most detrimental waste [3] leads to higher inventory carrying costs, increased storage requirements, and unnecessary human effort. Similarly, overprocessing, performing more than what the customer requires [2], results from inadequate demand forecasting, process non-standardization, and unclear customer specifications [9]. Waiting time or idle time arises from production bottlenecks due to machine breakdowns, long setup times, non-standardized production methods, or delays in material arrival. High idle time prolongs lead times, the time between customer order placement and product dispatch, and reducing it can save both time and costs. Defective products, not meeting customer specifications or predetermined standards, result in resource, human effort, time, and monetary wastage through defects and rework.

All these wastes stem from a lack of alignment between production and market demand and inadequate production planning. Lean tools and techniques are specifically designed to mitigate or eliminate these inefficiencies in the production system. Plants operating under Lean principles are better equipped to reduce pollution and various forms of waste [12].
Combining lean practices with sustainable manufacturing yields synergistic outcomes, as advocated by previous researchers who recommend embracing "Sustainable Lean Manufacturing" instead of implementing lean and sustainable manufacturing methodologies separately. This paper endeavours to emphasize the prospects of Sustainable Lean Manufacturing within the framework of sustainable development.

The global significance of sustainable development is underscored by the United Nations' Sustainable Development Goals. Sustainability extends beyond environmental conservation, encompassing social and economic dimensions. As outlined by [11], sustainability development is based on three pillars: "economic sustainability," "social sustainability," and "environmental sustainability," depicted in Figure 1.

Environmental sustainability involves preserving the natural environment to sustain its productivity and resilience, supporting human life [11]. Social sustainability hinges on various factors such as the availability of robust health systems, the existence of peace and respect for human rights, equitable access to decent work, gender equality, quality education, and adherence to the rule of law [11]. Economic sustainability, on the other hand, relies onthe adoption of appropriate practices in production, distribution, and consumption [11].

Figure no.1

Pillars of sustainable development

Source: [11]

Industries are involved in a range of unsustainable practices that demand specific attention, including excessive resource waste and emissions during production, subpar product quality, a high incidence of defects or rejects necessitating increased reprocessing, and the generation of waste due to dissatisfaction among both customers and employees [5].

Industries contribute to environmental contamination through various means, including air emissions, wastewater discharges, improper disposal of hazardous and solid wastes, and the overuse of scarce natural resources like fuel, water, and raw materials [10]. The use of hazardous substances in the production process can have adverse effects on both human

health and the environment, either directly or through their presence in products. Consequently, industries bear the responsibility for the entire product life cycle (pre- manufacturing, manufacturing, use, and post-use) and are urged to adhere to the 3Rs principle—Reduce, Reuse, and Recycle—in their operations [10].

Lean positive contributes to the three pillars of sustainability [8]. The advantages of integrating lean with sustainable development are detailed in Table no. 1 below.

Table no. 1

Lean Manufacturing and Sustainable development

Environmental sustainability	**Economical sustainability**	**Social sustainability**
Efficient resource utilization	Cost savings through resource management	Employee development
Energy conservation	Cost savings through waste elimination	Equal opportunity
Less pollution	Cost savings through fuel conservation	Quality of work life
Waste elimination	Customer satisfaction	Health and safety
Less consumption of hazardous materials	Increased market share	Better relationship between labour and management
Reduced carbon emission	High productivity	Good working environment
Responsible production and consumption	Enhanced competitiveness	Society well being
		Social responsibility

The primary objective of implementing Lean manufacturing is waste reduction in the production process, contributing to both environmental and economic sustainability. The efficient utilization of resources, without unnecessary waste, aids in the conservation of precious natural resources. Addressing Lean-related wastages, such as transportation, overproduction, and overprocessing, supports energy and fuel conservation. Effectively managing resources, reducing waste, and conserving energy led to cost savings. Since Lean manufacturing practices are implemented at the operational or bottom level of an enterprise, successful implementation requires support and involvement from workers. Worker

participation in decision-making processes related to the production process is essential for effective Lean implementation.

Lean manufacturing tools like 5S, Cellular manufacturing, Jidoka (Autonomation), and visual control not only enhance the work environment but also improve the quality of work life for employees. Integrating sustainability with Lean allows industries to focus more on the well-being of both the environment and human beings.

Currently, there is considerable discourse in both academic and industrial circles about the integration of sustainability with the lean concept to bring about a transformative impact in the industrial sector, aiming to preserve nature while enhancing the overall quality of life. Research studies [4], advocate for the encouragement of the integration of lean and green practices.

Sustainable manufacturing places emphasis on the development of products that are environmentally friendly across various aspects, including raw materials, manufacturing processes, and the final products, with minimal adverse environmental impacts [7]. What elevates the significance of sustainable manufacturing is its focus on the entire product life cycle, from design and development to disposal. In contrast to lean manufacturing, which primarily concentrates on manufacturing processes, sustainable manufacturing considers the entire production process right from the product's design stage. This involves designing products to be environmentally friendly, incorporating eco-friendly packaging, and avoiding the use of hazardous chemicals and materials. The production process in sustainable manufacturing employs environmentally friendly techniques, such as the use of lightweight materials, low energy consumption, and the recycling and reusing of materials [4]. It ensures optimal resource utilization without waste and pollution. Consequently, sustainable manufacturing takes into account environmental protection at every stage of production, including planning, product development, production, post-production, and disposal.

The transformation towards sustainability can significantly impact an industry's economic, social, and environmental performance, necessitating a thorough evaluation and analysisduring implementation [4]. While the shift to sustainability is challenging, it offers advantages such as increased competitiveness, enhanced productivity, and improved operational efficiency.

Studies emphasize that Sustainable Development requires integrated efforts at various levels, addressing social, environmental, and economic aspects [11]. The implementation of a

sustainable lean approach, guided by strategic decisions, is instrumental in reducing waste in traditional manufacturing processes [1]. Numerous studies have explored the synergy between lean methodologies like Kaizen, 5S, Poka-yoke, Kanban, single-minute exchange of die, cellular manufacturing, and value stream mapping to achieve sustainability goals [1].

The Sustainable Lean Manufacturing approach aligns with Sustainable Development Goals (SDGs), offering benefits such as cost and waste reduction, long-term development, infrastructure innovation, resilience, and an improved standard of living for society [1]. Transitioning from traditional to sustainable manufacturing can enhance a company's image, fostering financial gains alongside social and environmental responsibility [10].

While existing research often focuses on individual Lean principles or environmental metrics, there is a need for studies linking Lean methodologies with all pillars of sustainability—economic, social, and environmental [12]. However, conflicting opinions exist regarding the ability of Lean methodologies alone to make an enterprise sustainable, with some researchers arguing that lean emphasizes incremental changes rather than revolutionary ones for full sustainability [4]. Empirical research is crucial to substantiate the synergistic benefits of the Sustainable Lean Manufacturing approach. The primary obstacle, high transformation costs, impedes industries from embracing such changes, necessitating policymakers to incentivize the adoption of "Sustainable Lean Manufacturing" through schemes, policies, laws, and regulations.

The ongoing digital revolution, marked by advancements in Artificial Intelligence, connectivity, digitization, additive manufacturing, virtual reality, Internet of Things (IoT), machine learning, blockchain, robotics, quantum computing, and synthetic biology, holds the potential to drive sustainable development in the years to come [13]. The emerging conceptof Industry 5.0 can be seamlessly integrated with sustainability and the lean paradigm, necessitating further research in this evolving field.

Conclusion

In conclusion, the implementation of Lean practices holds the potential to significantlyenhance value creation by reducing waste and increasing productivity, ultimately leading to the production of higher-quality goods and services [5]. When integrated with sustainability goals, Lean practices can bring about noteworthy transformations in the industrial sector. A review of existing literature underscores the synergies between Lean and sustainable manufacturing methodologies, emphasizing their collective impact on industrial

transformation. This study has aimed to elucidate the connection between Lean and sustainability, advocating for the adoption of a "Sustainable Lean Manufacturing" methodology over individual implementations. Successful implementation of this integrated approach requires thorough planning, and governmental support through schemes, policies, laws, and regulations can further encourage its adoption. While recognizing that an immediate transformation may not be feasible, industries are urged to initiate efforts towards becoming sustainable lean enterprises.

References

1. Debnath, B., Shakur, M. S., Bari, A. B. M. M., &Karmaker, C. L. (2023). A bayesian best–worst approach for assessing the critical success factors in sustainable lean manufacturing. *Decision Analytics Journal*, *6*, 100157. https://doi.org/10.1016/j.dajour.2022.100157

2. Dennis, P. (2015). *Lean production simplified: A plain-language guide to the world's most powerful production system* (3rd ed.). CRC Press, Taylor and Francis Group.

3. Elbert, Mike. (2013). *Lean production for the small company*. CRC Press, Taylor and Francis Group.

4. Elemure, I., Dhakal, H. N., Leseure, M., &Radulovic, J. (2023). Integration of Lean Green and sustainability in manufacturing: A review on current state and future perspectives. *Sustainability*, *15*(13), 10261. https://doi.org/10.3390/su151310261

5. Florescu, A., &Barabaş, B. (2018). Integrating the lean concept in sustainable manufacturing development. *IOP Conference Series: Materials Science and Engineering*, *399*. https://doi.org/10.1088/1757-899x/399/1/012018

6. Ghobakhloo, M., Iranmanesh, M., Foroughi, B., BabaeeTirkolaee, E., Asadi, S., &Amran, A. (2023). Industry 5.0 implications for Inclusive Sustainable Manufacturing: An evidence-knowledge-based strategic roadmap. *Journal of Cleaner Production*, *417*, 138023. https://doi.org/10.1016/j.jclepro.2023.138023

7. Indrawan, S., Sinulingga, S., Matondang, N., &Ciptomulyono, U. (2023). International Conference on Industrial Engineering and Operations Management. In *Relationships*

Between Lean and Sustainability Manufacturing: A Literature Review (pp. 862–872). IEOM Society International.

8. Järvenpää, E., &Lanz, M. (2019). Lean Manufacturing and Sustainable Development. *Encyclopedia of the UN Sustainable Development Goals*, 1–10. https://doi.org/10.1007/978-3-319-71062-4_7-1

9. Jiju, A., Vinodh, S., &Gijo, E. V. (2016). *Lean Six Sigma for Small and Medium Sized Enterprises A Practical Guide*. CRC Press

10. Kaczmarek, M. J., Antosz, K., & Gola, A. (2021). From Lean to Sustainable Manufacturing – An Overview. *European Research Studies Journal*, *24*(2), 291–300.

11. Mensah, J. (2019). Sustainable development: Meaning, history, principles, pillars, and implications for human action: Literature review. *Cogent Social Sciences*, *5*(1). https://doi.org/10.1080/23311886.2019.1653531

12. Sawhney, R., Teparakul, P., Bagchi, A. and Li, X. (2007). En-Lean: a framework to align lean and green manufacturing in the metal cutting supply chain, *International Journal of Enterprise Network Management*, *1*(3), 238–260.

13. TWI2050 - The World in 2050. (2018). (rep.). *Transformations to Achieve the Sustainable Development Goals*. Laxenburg, Austria: International Institute for Applied Systems Analysis (IIASA). Retrieved from www.twi2050.org

14. *What is Ergonomics*. (2014, July 5). Dohrmann Consulting. https://ergonomics.com.au/what-is-ergonomics/

AN OVERVIEW OF EMERGING GREEN FINANCE IN INDIA

Dr. J. Shyla
Assistant professor and Research supervisor,
PG & Research Department of CommerceV.O.Chidambaram college
Thoothukudi 628008.
Affiliated to Manonmaniam Sundaranar University, Abhishekapatti, Tirunelveli627012
Tamil Nadu.
Email id:drshylastalin@gmail.com

Kochu Tresya M
Reg No:22113081012001
PhD Scholar (full time),
PG & Research Department of Commerce
Malankara catholic college, Kaliakkavilai-629153
Affiliated to Manonmaniam sundaranar University, Tirunelveli. 627012
Emailid:kochumariamarshal6@gmail.com

Abstract

As the global community fights with the urgent need to address environmental challenges and mitigate the impacts of climate change, the financial sector is increasingly recognizing its crucial role in fostering sustainable development. To protect the environment and support other sustainable development initiatives, financial aid is called "green finance." This article examines the concept of green finance and areas covered under green financing, including green banking, green insurance, and green bonds. In Addition to this, it assesses opportunities and provides recommendations for the successful implementation of green finance.

Keywords: Green banking, Green insurance, Green Finance, Green bonds, Sustainable development

INTRODUCTION

Green finance has evolved as a vital instrument in the pursuit of sustainable development and aligning financial systems with environmental objectives. In the present era, society recognizes the importance of green finance as they are facing challenges due to pollution and other environmental issues. The initiatives taken through green finance include financial practices that promote environmental protection and thus ensure sustainable development. The studies are continuously exploring innovative approaches to achieve sustainability, such an approach is called, green finance.

Green finance is a concept that combines the use of business processes with sensitivity to environmental issues. This concept is defined by the behavior of all parties involved in the supply chain of goods and services, including but not limited to the providers of financial resources, the producers of goods and services, and the consumers of the goods and services. Notably, green finance can be viewed differently based on the party involved. For instance, the financial perspective is sensitive to the use of the allocated funds for the conservation of the environment through elaborate plans and propositions for returns on investment. The concept of green finance also differs from the traditional methods of banking in that it is specific to the benefits accrued from environmental protection by considering the environmental risk management plans as well as the sustainability of the plans. Moreover, green finance aims at promoting the green economy where the industries funded are expected to reduce carbon emissions by significant margins. As a result, the green economy has threefold benefits. First, the quality of life of the consumers is enhanced, leading to more business expansion opportunities compared to traditional operations. Secondly, the green economy promotes environmental awareness and ensures that producers and consumers conserve the environment through the adoption of green energy as well as the use of biodegradable and low-carbon products. Thirdly, there is a social effect whereby the communities living around the production zones get the benefits of corporate social responsibilities that the empowered by green finance. These benefits include the provision of clean water and air. The green finance sector in India is in a growing phase and it has a long way to go to become a self-sufficient and resilient green economy. It is crucial for our government to have a transparent and encouraging policy framework to realize the fullpotential of green finance as a tool to achieve sustainability.

RESEARCH METHODOLOGY

The present study is descriptive. The information is gathered from various secondary sources including research articles, journals, reports, and websites.

OBJECTIVES OF THE STUDY

1. To understand the concept of green finance.
2. To explore the areas of green finance that assist in achieving sustainability objectives.

REVIEW OF LITERATURE

1. BabitaJha, PritiBakhshi (2019) study brings down the focus that India should not only focus on domestic investors. The green finance instruments should be designed such that it should attract both local and international investors.
2. Gincy Charles, Bijin Philip (2020) study stated the progress on various aspects of green finance and future scopes in green finance in India. The study analyzes the challenges and opportunities of green finance in India and various investment avenuesin green finance in India. The study concluded that green financial strategies and products are essential to shape economic development sustainably.
3. P. Dhoot and S. Awate (2021) study was based on descriptive research containing the details of the kind of green finance products and services offered by the Indian markets and to analyze the trends in green finance in India. It stated that the Indian green finance market is emerging and it has not been able to attract an ample number of investors. It shows that current market practices and regulations monitoring the market are becoming a great hurdle in the success of financial instruments.
4. Debjani Sarkar, Amar Latta (2022) the study explain Green Finance is a new concept that comprises with different range of products and services to give opportunities to environmentally friendly projects and infrastructure developments.All the issues and challenges faced by the government and financial institutions to implement green finance have been discussed in this paper along with the important and different strategies adopted by them.
5. Dr. Ramakrishna (2023) This study shows the recent trend and future opportunities in green finance in emerging India. It mainly discusses green bonds and ends with the Successful Green Project in India. this paper implicates valuable suggestions to meet the sustainability to our country.
6. Dr. KairviRathod (2023) In this study explained the recent trends and prospects of green finance in India. It also details the scope of green finance and the areas of green finance.

GREEN FINANCE: THEORETICAL BACKGROUND

According to the Chartered Banker Institute, Green Finance can be defined as any process, financial initiative, product, or service that is intended for environmental protection or towards management of environmental impacts, investment, and finance. Green Finance is all

about funding or providing monetary assistance for projects and programs that are aimed towards sustainable development. Green financing through funding the projects that aim at achieving sustainable development helps in creating harmony between the environment, finance, and development. Thus, it helps to protect natural resources, encourages the use of renewable energy resources, and thus attempts to reduce the exploitation of the environment by human beings. Hence it works as an effective tool to attain sustainable development goals.

Major Areas of Green Finance

Green Banking

It deals with encouraging eco-friendly practices with the help of banking activities to protect the environment. It operates by integrating technological improvements, changing stakeholders‘ expectations, and operational innovations thus it contributes to the welfare of nature and the financial sector. The Indian banks providing green banking services are State Bank of India, Punjab National Bank, Bank of Baroda, Canara Bank, ICICI Bank Ltd, DFC Bank Ltd, Kotak Mahindra Bank, Induslnd Bank, YES Bank, HSBC Group, IDBI,etc. The various practices used as a part of green banking are Online Banking, Green mortgage, Green home equity loan, Green car loan, Green credit cards, etc.

Green Insurance

It is a type of insurance that helps to protect the environment and combat climate change. Also known as eco-friendly insurance, it is an economic incentive to encourage behavioral change. As more and more people understand their impacts on the environment, they are opting for eco-friendly practices. As a result, insurance companies are creating innovative products and services to encourage sustainable practices and technologies. The various green insurance are Green car insurance and green business, Eco-friendly home insurance, green travel insurance, green life insurance, carbon insurance, etc.

Green Bonds

The European Investment Bank and the World Bank initially released green bonds in 2007. Later, individual businesses, banks, and financial organizations began issuing green bonds. According to SEBI regulations, the earnings from such bonds should be used to fund environmentally friendly efforts, such as the use of renewable energy, combating climate change, protecting biodiversity, lowering pollution levels, managing trash, etc. Types of

Green Bonds are corporate bond, project bond, municipal bond, finance sector bond, green project bond, green securitized bond, etc.

Benefits of Green Finance

Encourages Spread of Technologies and Development of Environmentally Friendly Infrastructure: Governments of developing countries are constructing infrastructure that will improve long-term resource management, increase a country‘s competitiveness, and channel private sector money into local green markets.

Produces a Comparative Advantage: In response to mounting challenges from climate change and other environmental and economic issues, a low-carbon green development may unavoidably shift from a voluntary to an obligatory strategy. Expanding green financing will give you a competitive advantage when environmental regulations tighten.

Adds Business Value: Businesses can enhance the value of their portfolio by increasing their participation in green financing. It offers their company a green edge, attracting more environmentally concerned investors and customers.

Enhances Economic Prospects: Governments that promote green financing assist in protecting their societies from scarcity of resources. They do this by building and encouraging local markets for renewable energy, as well as entering new markets with high employment potential.

RECOMMENDATIONS

- Create awareness among the general public about the value of environmental protection and the vast range of green finance options available.
- Create an appropriate regulatory framework to assess projects involving green finance, to safeguard investors' interests, and make sure that each project's financesare exclusively used for their intended purposes.
- Separate laws must be passed to govern the misuse of green finance.
- Promote research in the area of green financing, which will help to explore new green investment ideas.

CONCLUSION

Green financing being an effective tool of sustainability is gaining more importance in the present scenario. Raising awareness about the need to protect nature and increased funding of green projects has opened a wide variety of opportunities in the area of green finance. Environmentalists, government, investors, and financial institutions have to work together to increase the awareness and importance of green finance. A proper regulatory framework has to be set to evaluate green projects and their implementation thus ensuring the protection of the investors. India being a developing country should concentrate on renewable energy generation, protecting natural resources, efficient energy management, climate adoption, and other ecological issues with the help of green financing. Thus, it can be concluded that green finance if properly managed will work as an effective tool for sustainable development.

REFERENCES

1. BabitaJha, PritiBakhshi (2019): ‒Green Finance: Fostering Sustainable Development in India‖, International Journal of Recent Technology and Engineering, 8(4),3798-3801.
2. Gincy Charles, Bijin Philip (2020): ‒Green Finance: Recent Drifts, Confrontation and Prospect Opportunities for Sustainable Development in India‖, MuktShabd Journal, ix(iv), 1854-1865.
3. P. Dhoot and S. Awate (2021): ‒Green Financing: An emerging form of sustainable development in India‖, Vidyabharati International Interdisciplinary Research Journal 12(2) 698-712.
4. Debjani Sarkar, Amar Latta (2022), ‒Role of Banking System in Green Finance in the Context of India: An Analysis‖. Asian Journal of Management,13(3):227-240.
5. Dr. KairviRathod(2023),‖Recent trends of Green Finance in India‖, Vidhyayana An International Multidisciplinary Peer-Reviewed E-Journal,8(5),1-11.
6. Dr. Ramakrishna (2023), ‒Emerging Trends of Green Finance in India: Challenges and Opportunities‖, International Journal for Multidisciplinary Research (IJFMR),5(5),1-4.

CURRENT TRENDS IN HUMAN DEVELOPMENT PRACTICES

Ms. Revathy A R[1], Ms. Kripa Suresh[2]

[1]*Assistant Professor, Naipunnya Institute of Management and Information Technology*

revathyar01995@gmail.com

[2]*Research Scholar, Rathinam College of Arts and Science*

kripasuresh85@gmail.com

INTRODUCTION

Temporary, project-based structures are one of the most significant trends in contemporary organizations, with a rising number of people choosing to work in them on a daily basis. In order to ensure an organization's competitive advantage, human resources are seen as unique and valuable resources. Therefore, it is crucial to manage human resources effectively in order to raise the quality of organizational activities. Human resource management, hiring practices, and the development of employee competencies all appear to be impacted as firms adopt project-based frameworks. But there is hardly any empirical research done in this field. In this new corporate context design, concerns related to working life must also be revisited. Motivation, dedication, empowerment, job happiness, time constraints, and medical stress appear to be rethought from the viewpoint of the individual employee in the projectified setting. Project work is discussed as a new career path and a means of tying project organizations to personal objectives in working life concerns.

LITERATURE REVIEW

The training in competencies necessary for Workforce 4.0 and new job profiles will be significantly impacted by the new HRM 4.0 paradigms (Ana et al., 2019). Future skills will necessitate the creation of more planned, coordinated, and creative tasks as opposed to repetitive and easy ones, allowing people to demonstrate their abilities in fields that are more valuable (Becker and Stern, 2016, Fareri et al., 2020, Flores et al., 2020). As a result, tasks that were previously completed manually and through individual analysis can now be automated, allowing for the quick, wise, and accurate study of massive amounts of data.

OBJECTIVES OF THE STUDY

1. To study the perceptions of employees on the importance of HRD practices in industrial organization.
2. To Identify and analyze emerging human development practice

HYPOTHESES OF THE STUDY

The specific hypotheses of the study are as follows:

- H1: The distribution of employees' perceptions regarding the importance of HRD practices is the same across different categories (e.g., different departments, agegroups, etc.) In industrial organizations.
- H2:There is no association between the identification of emerging human development practices and organizational success in industrial organizations.

SIGNIFICANCE OF THE STUDY

Organizations are changing frequently in the current dynamic and unstable environment to ensure their survival, growth, and development. The external environmental elements that have an impact on the organisation are never constant. To achieve sustainable development and advancement, organisations should be aware of these changes and periodically adopt specific long-term strategies. Organizations must independently assess their internal working environment, systems, processes, and workforce capabilities in order to achieve a competitive edge and develop sustainably in the global marketplace. It is challenging for organisations to promote organisational effectiveness and organisational development unless they reevaluate and adopt proactive measures.

1. RESEARCH METHODOLOGY

1. SAMPLING DESIGN

The study is descriptive in nature and based on Convenience sampling. The individuals included inthis study are different age groups-and various income groups

2. SAMPLE SIZE

The study has used a sample size of 250.

3. AREA OF THE STUDY

Thrissur,Ernakulam districts- INFOPARK

4. DATA COLLECTION

The study is based on primary and secondary data. Primary data has been collected through questionnaire. Secondary data has been collected from websites and variousjournals.

5. TOOLS FOR ANALYSIS

Percentage analysis , Chi-square test and weighted average method are used for the study.

6. LIMITATIONS

- The study is based on responses given by the selected respondents; hence it does(not produce representative results)
- The hesitation of some individuals in revealing their frank opinion might have(affected the outcome.
- Biased answers given by the respondents might impact the findings of the study

7. FINDINGS OF THE STUDY

- Employees in different departments and age groups exhibit SAME perceptions regarding the importance of HRD practices in industrial organizations.
- Statistical analysis ACCEPT the null hypothesis, indicating NO significant differences in the distribution of employees' perceptions regarding the importance of HRD practices across different categories.
- The study finds a significant association between the identification of emerging human development practices and organizational success in organizations.
- Through the analysis of emerging trends, specific human development practices gain prominence in organizations.

1.8 SUGGESTION OF THE STUDY

- Employee opinions of HRD trends are significantly influenced by the current framework and efficient communication system. Many of the respondents do understand the current developments in HRD theory. The HRD movement involves establishing an environment at work where employees may perform to the best of their abilities. Trends in HRD involve an entire work system that kicks off when a position is identified as necessary, therefore it's critical to maintain constant communication to make sure everyone is aware of the organization's mission and objectives.

- HRD trends must assist staff in determining how to enhance performance and give them the chance to talk about their future career options. It should unavoidably offer the chance to make plans and set goals for advancing your career.

8. CONCLUSION OF THE STUDY

Enhancing individual performance in accordance with organisational performance while taking into account employee personal goals is the core component of the framework for current trends in HRD system design. It has become imperative to overcome resistance to change by gaining employee buy- in and winning the psychological war of employee evaluations and effective performance. Driving organisational performance and success depends on "trend" in HRD. The emphasis being placed more and more on developing a positive workplace culture to improve talent and competency is one of the most notable changes.

BIBLIOGRAPHY

Lehmann, V. (2010). Connecting changes to projects using a historical perspective: Towards some new canvases for researchers. International Journal of Project Management, 28, 328-338. 22.

Lindkvist, L. (2004). Governing Project-based Firms: Promoting Market-like Processes in Hierarchies. Journal of Management and Governance, 8, 1, 3–25. 23. Midler, C. (1995). Projectification‘ of the firm: the Renault Case. Scandinavian Journal of Management, 11, 4, 363–75. 24. Neverauskas, B. &Stankevicius, V. (2008). Project management: research and studies at the faculty of economics and management. Inzinerinėekonomika-Engineering economics, 4, 59-66.

Gareis, R. (2010). Designing changes or permanent organizations by processes and projects. International Journal of Project Management, 28, 4, 314-327.

DIFFERENTIAL INFLUENCE OF GENDER ON THE EFFECTIVENESS OF STRUCTURED PHYSICAL EDUCATION ON HEALTH-RELATED PHYSICAL FITNESS OF ELEMENTARY SCHOOL STUDENTS

Sreejith, P. A.[1], &Manoj, T. I[2]

([1]Head, Dept. of Physical Education, Naipunnya Institute of Management and Information Technology, Koratty, Thrissur, Kerala-680308, E-Mail: sreejith@naipunnya.ac.in, [2]Director of Students Welfare, Kerala Agricultural University, Thrissur, Kerala-680656)

Abstract

The study aims to find out the differential influence of gender on the effectiveness of a Structured Physical Education Programme (SPEP) on health-related physical fitness (Cardiorespiratory endurance, Muscular strength, Muscular endurance, Flexibility, and Body composition) of elementary school students of Kerala. The pre-test post-test control group design was employed to test a single null hypothesis by collecting data from 171 elementary school children (age range 10-12 years) from six intact classes, two each from fifth, sixth and seventh grade levels. The participants were separated into control groups and experimental groups, comprised of children from different grade levels. The groups were pretested for the five health-related physical fitness components by employing standard methods. The gain scores obtained by subtracting the pre-test scores from the post-test scores for the gender- based sub-samples were compared by employing the independent sample t-test and two-tailedtest of significance for two independent proportions to test the null hypothesis. The analyses exposed that gender exert a significant differential influence on the effectiveness of the SPEP in improving improving cardiorespiratory endurance, muscular endurance, muscular flexibility and body composition of elementary school students. However, gender is not a significant factor that differentiate elementary school students on the basis of the success of the SPEP in enhancing the muscular strength of the students.

Keywords: *Structured Physical Education Programme**,** Health-related physical fitness, Muscular strength, Cardiorespiratory endurance, Muscular endurance, Flexibility, Body composition*

1. Introduction

Physical fitness is an important component to leading a healthy lifestyle. The inclusion of regular fitness activity helps students maintain fitness, develop muscular strength and improve cardiovascular health. It is associated with lower prevalence of cardiovascular disease risk factors, reduces total and abdominal adiposity, improves mental and bone health, increases academic performance in young people, and protects against all-cause mortality (Kvaavik, Klepp, Tell, Meyer & Batty, 2009; Ortega, Ruiz, Castillo, Sjostrom, 2008). Amongschool-age children, there is evidence that physical fitness is more strongly related to metabolic risk than physical activity (Rizzo, Ruiz, Hurtig-Wennlof, Ortega &Sjostrom, 2007). A regular fitness activity improves the absorption of nutrients by the body, improves digestive processes and increases physiological processes. In spite of the beneficial effects of physical education on the all-round development of the personality and academic excellence of children, many schools have cut back on their physical education programmes, placing greater emphasis on academics as they strive to prepare students for college and the workforce. Worldwide, childhood obesity has increased 10 times in the last 40 years, and it isconsidered a serious public health issue (World Health Organization, 2019). A sedentary lifestyle is widely recognized as a contributor to the development of obesity and is also associated with decreased physical fitness, academic performance, self-esteem, and increased aggression in children (Active Healthy Kids Canada, 2011).

Though school curriculum offers structured physical education as a compulsory subject for children at all grade levels in the state of Kerala (India), it is the most neglected subject as there is no term-end or year-end examination for it. Lack of awareness and desirable attitude towards physical activities, lack of understanding on the relationship of physical activity with health-related physical fitness, the false notion that wasting time and energy for physical activity will compromise with learning of other academic subjects etc. are the major reasons for not taking physical education as a serious business of school life. Researches in recent years have come out with ample evidences to highlight that spending time for physical activities is no more a waste of time, instead it contributes to academic achievement of boys and girls by fostering their mental and physical wellbeing (Barth, Skulberg, Anderssen, Tjomsland& Thurston, 2021; Getu, 2020; Marques, Gomez, Martins, Catunda&Sarmento, 2017). Gender difference in the physical fitness and physical activity among individuals in different ages have been reported in the literature of sports research (Mc Carthy& Warne,

2022; Silva, Barbosa & Del Duca, 2014; Khan & Masood, 2010). Research evidences are needed to address the ever increasing sedentary behaviour among children and its health effect. In this context, this investigation aims to explore the differential influence of gender on the effectiveness of structured physical education programme in enhancing physical fitness of elementary school students of Kerala.

2. Objective

The objective of the present study is to find out the differential influence of gender on the effect of structured physical education on health-related physical fitness of elementary school students of Kerala.

3. Hypothesis

The study tested a single null hypothesis: ‒Gender has no significant differential influence on the effect of structured physical education on health-related physical fitness of elementary school students‖.

4. Methodology

1. *Method:* Quasi-experimental research which followed pretest-posttest control group design was employed for the study.

2. *Population and Sample:* Children in the age range 10-12 years, studying in grades fifth, sixth and seventh, in elementary schools affiliated to Kerala Board of Public Examination, Govt. of Kerala (India) constituted the population for the study. A total number of 171 elementary school students belonging to six upper primary classes, two divisions each from Standard V, VI and VII (grade levels 5^{th}, 6^{th}& 7^{th}), of the St. Thomas Higher Secondary School, Malayattoor, located in the Angamaly Block of Ernakulam district (Kerala State), constitute the participants of the study.

3. *The Experimental Intervention:* The classes were randomly assigned to the control group and the experimental group in such way that one division each from each grade level was allotted to the groups. The control groups and the experimental groups were pre-tested for five physical-health components, *viz*., cardiorespiratory endurance, muscular strength, muscular endurance, flexibility, and body

composition. This is followed by intervention with the Structured Physical Education Programme (SPEP) for the experimental groups, while the control groupswere left free. Both the groups, however, were not prevented from getting the routine physical education classes as per the school timetable by the school physical education instructor. The experimental intervention consisted of 36 structured physical education classes each of 40 minutes duration, given at the rate of three classes per week (from 3.30 pm to 4.15 pm) by qualified and experienced teachers of physical education.

4. *Tools & Techniques:* Standard methods and tools were used for measuring health-related physical fitness of the participants. Accordingly, the Cardiorespiratory endurance was assessed by the 1-Mile endurance Run/Walk Test, Muscular strength by the Modified pull-ups, Muscular endurance by the Sit-up test, Flexibility by Sit and reach test, and the Body composition by estimating Body Mass Index (BMI).

5. *Statistical Techniques Employed:* Apart from the estimation of descriptive statistical indices such as Mean, Median, Standard deviation, Skewness, Kurtosis and Standard error of mean, the data were subjected to independent sample t-test and two-tailed test of significance for two independent proportions for testing the hypothesis.

5. Analysis and Interpretation

The differential influence of gender on the effectiveness of structured physical education on health-related physical fitness (HRPF) of elementary school students was studied by comparing boys and girls in the experimental group with respect to the gain scores*(estimated by subtracting pre-test score from post-test score)* of different components of physical fitness.

1. Differential influence of gender on the effect of SPEP on cardiorespiratory endurance

The boys and girls in the experimental group were compared with regard to the gain scores of cardiorespiratory endurance test (the time taken to complete 1600m

Walking/Running) to find out significant difference, if any. The data and result of the independent sample t-test performed is given in Table 1.

Table 1: Comparison of the gain cardiorespiratory endurance test scores of boys and girls in the experimental group

Groups	Statistical Indices				t	Sig
	N	M	SD	SE_M		
Boys	44	-.475	.304	.046	3.814	.001
Girls	47	-.728	.327	.048		

The t-value estimated is significant at 99.9% confidence interval, revealing a true difference between boys and girls in the elementary schools regarding the effect of Structured Physical Education Programme on their cardiorespiratory endurance ($t = 3.814$; $p<.001$). Inspection of the mean estimates shows that structured physical education is more effective in girls than in boys. The negative sign in the mean estimates indicates a decrease in the time taken to complete the 1600 m Walking Running Test.

2. Differential influence of gender on the effect of SPEP on muscular endurance

The gender groups of participants in the experimental group were compared withrespect to the gain scores of muscular endurance (number of sit-ups in a minute) so as to find out the differential effect of gender on the effect of SPEP on muscular endurance. The data and result of the independent sample t-test performed in this context is given in Table 2.

Table 2: Comparison of the gain muscular endurance scores of boys and girls in the experimental group

Groups	Statistical Indices				t	Sig
	N	M	SD	SE_M		
Boys	44	1.66	1.01	.152	4.808	.001
Girls	47	2.94	1.47	.214		

The t-value obtained on comparing the gender groups is large enough to be significant at 99.9% confidence interval (t = 4.808; p<.001). It means that there is true difference between boys and girls with respect to the effect of structured physical education programme on the muscular endurance of elementary school students. Inspection of the mean estimates make it clear that the SPEP was more successful in enhancing the muscular endurance ofgirls, compared to that of boys.

3. Differential influence of gender on the effect of SPEP on flexibility

In order to find out whether there is any significant gender difference in the efficacy of **SPEP** on the muscular flexibility of elementary school students, the gain scores of sit and reach test of boys and girls were compared. The data and result of the t-test carried out incidentally is given in Table **3**.

Table 3: Comparison of the gain flexibility scores of boys and girls in the experimental group

Groups	**Statistical Indices**				**t**	**Sig**
	N	**M**	**SD**	**SE$_M$**		
Boys	44	3.02	1.87	.282	2.841	.01
Girls	47	1.94	1.77	.259		

The result of the two-tailed test of significanceshows that there is a true difference between boys and girls with respect to the improvement they made in muscular flexibility (t = 2.841; p<.01). A closer observation of the mean scores exposes that the SPEP was more successful with boys than with girls in improving their flexibility.

4. Differential influence of gender on the effect of SPEP on muscular strength

The boys and girls in the experimental group were compared to find out the significant difference, if any, with regard to the effect of structured physical education on the muscular strength of elementary school students. The data and result of the independent sample t-test done to compare the gain scores of the modified pull-up test is given in Table 4.

Table 4: Comparison of the gain pull up test scores of boys and girls in the experimental group

	Statistical Indices				t	Sig
	N	M	SD	SE_M		
Boys	44	1.68	1.290	.194	0.226	NS
Girls	47	1.74	1.359	.198		

The t-valueestimated on comparing the gender groups with respect to the gain scores of muscular strength scores of students in the experimental group is not large enough to be significant at least at 95% confidence interval ($t = 0.226$; $p>.05$). It exposes that boys and girls are almost alike regarding the effect of SPEP in improving their muscular strength. In other words, structured physical education are equally effective for both boys and girls in enhancing their muscular strength.

5. Differential influence of gender on the effect of SPEP on body composition

The differential influence of gender on the efficacy of structured physical education on body composition of elementary school students was studied by comparing the proportion of boys and girls in the overweight and underweight categories who attained normal weight as a result of the treatment. The data and result of the two-tailed test of significance for the differences between two independent proportions performed in this context is given in Table 5.

Table 5: Comparison of boys and girls in the experimental group with regard to the proportion of overweight and underweight children who attained normal weight

Groups	N	I	P	Z	Sig.
Boys	13	10	0.769	1.985	.05
Girls	13	5	0.385		

The z-value estimated is significant at 95% confidence interval ($z = 1.985$; $p<.05$), revealing that boys and girls differ significantly regarding the effect of structured physical

education on the body composition. A closer observation of the proportions estimated for the gender groups shows that the structured physical education programme is more effective in maintaining the body composition of boys than that of girls.

6. Conclusions

Gender has significant differential influence on the success of structured physical education in promoting cardiorespiratory endurance of elementary school students. The structured physical education is more effective in promoting the cardiorespiratory endurance of girls than that of boys. Gender is a critical factor in the effectiveness of structured physical education in enhancing the muscular endurance of elementary school students. The structured physical education programme was found more successful in enhancing the muscular endurance of girls compared to that of boys. Boys and girls differ significantly with regard to the improvement they made in flexibility when exposed to structured physical education programme. The SPEP is found to be more effective in bringing about body flexibility in boys than in girls. Gender of the learner is not a significant decisive factor in discriminating elementary school students on the basis of the effect of structured physical education on their muscular strength. The SPEP is more effective for boys than for girls to attain normal body weight. The analyses carried out show that significant gender difference exists among elementary school students with respect to the effect of structured physical education on improving cardiorespiratory endurance ($t = 3.814$; $p<.001$), muscular endurance ($t = 4.808$; $p<.001$), muscular flexibility ($t = 2.841$; $p<.01$), and body composition ($z = 1.985$; $p<.05$). No significant gender difference, however, was found to exists in the case of the efficacy of SPEP in enhancing the muscular strength ($t = 0.226$; $p>.05$) of the students. The hypothesis formulated in this context (gender has no significant differential influence on the effect of structured physical education on health-related physical fitness of elementary school students) is, therefore, partially accepted.

7. Acknowledgements

This paper is a part of the Ph.D research by the first author under the supervision of the second author. The authors place on record their profound and sincere gratitude to theDirector, Centre for Research and Evaluation, Bharathiar University, Coimbatore, for the opportunity given to carry out the research activity. Heartfelt thanks are also due to the

students, teachers and authorities of St. Thomas Higher Secondary School, Malayattoor, for their whole hearted cooperation and support during the data collection phase of the study.

8. References

Active Healthy Kids Canada. (2011). Don‘t let this be the most physical activity our kids get after school. The Active Healthy Kids Canada 2011 Report Card on Physical Activity for Children and Youth, AHKC, Toronto. https://dvqdas9jty7g6.cloudfront.net/reportcard2011/ahkcreport card20110429final.pdf

Barth, V. I., Skulberg, K. R., Anderssen, S. A., Tjomsland, H. E., & Thurston, M. (2021). Physical activity and academic achievement among Norwegian adolescents: Findings from a longitudinal study. *Preventive Medicine Reports, 21,* 101312. https://doi.org/10.1016/j.pmedr. 2021.101312

Getu, T. (2020). The effect of physical activity on academic performance and mental health: Systematic review. *American Journal of Science, Engineering and Technology, 5(3),* 131- 136. https://doi.org/10.11648/j.ajset.20200503.12

Khan, K. A., & Masood, K. M. (2010). Gender differences and clustering pattern of behavioural risk factors for chronic non-communicable diseases: Community-based study from a developing country. Chronic Illness, 6, 163–170. https://doi.org/10.1177/1742395309352255

Kvaavik, E., Klepp, K. I., Tell, G. S., Meyer, H. E., & Batty, G. D. (2009). Physical fitness and physical activity at age 13 years as predictors of cardiovascular disease risk factors at ages 15, 25, 33, and 40 years: Extended follow-up of the Oslo Youth Study. *Pediatrics. 123(1),* e80–e86. https://doi.org/10.1542/peds. 2008-1118

Marques, A., Gomez, F., Martins, J., Catunda, R., &Sarmento, H. (2017). Association between physical education, school-based physical activity, and academic performance: A systematic review. *Retos*: *NuevasTendenciasenEducaciónFísica*, *Deportes y Recreación,* 31, 316-320. https://doi.org/10.47197/retos. v0i31.53509

McCarthy, C., & Warne, J. P. (2022). Gender differences in physical activity status and knowledge of Irish University staff and students. *Sport Science and Health, 18,* 1283–1291. https://doi.org/10.1007/s11332-022-00898-0

Ortega, F. B.; Ruiz, J. R.; Castillo, M. J. &Sjostrom, M. (2008). Physical fitness in childhood and adolescence: A powerful marker of health. *International Journal of Obesity, 32(1),* 1-11. https://doi.org/10.1038/sj.ijo.0803774

Rizzo, N. S., Ruiz, J. R., Hurtig-Wennlof, A., Ortega, F. B., Sjostrom, M. (2007). Relationship of physical activity, fitness, and fatness with clustered metabolic risk in children and adolescents: The European youth heart study. *Journal of Paediatrics, 150 (4),* 388–394. https://doi.org/10.1016/j.jpeds.2006.12.039

Silva, K. S., Barbosa, F. V. C, & Del Duca, G. F. (2014) Gender differences in the clustering patterns of risk behaviours associated with non-communicable diseases in Brazilian adolescents. *Preventive Medicine (Baltim),* 65, 77–81. https://doi.org/10.1016/J.YPMED.2014.04.024

World Health Organization. (2019). Mapping the health system response to childhood obesity in the WHO European region. An overview and country perspectives. WHO Regional Office for Europe; Copenhagen, Denmark. https://apps.who.int/iris/handle/10665/346468

▪

A STUDY ON ENVIRONMENT DEGRADATION, GREEN ECONOMY AND SUSTAINABILITY DEVELOPMENT GOALS

ANIL KUMAR M, Research Scholar, Naipunnya Business School, affiliated to KUFOS, Madavana, Panangad, Ernakulam, anilscholar1965@gmail.com

Dr.SURAJ. E.S. Associate Professor, KCT Business School, Coimbatore, Tamil Nadu, surajandsuraj@yahoo.com

Abstract

Global environmental restoration is one of the mega encounters of contemporary epochs. In the modern eco-friendly society, the Go Green philosophy has attained countless acceptance and is apropos in every walk of life. All activities that envisage the ecological effect and embellish sustainability can be termed as green deeds. Green finance is an adroit bustle incipient as a precedence for public policy which is articulated as the monetary backing offered for the projects that dispense with environmental fortification, vindicating the penalties of climate change, investing in renewable sources of energy, intensifying the green shelter, and all other endeavours associated with sustainable development. Despite recent global investment in renewables and energy efficiency declining by 3% and maybe filibustering further, fossil fuels may continue to dominate energy investment. Many technologically advanced and developing countries continue to support coal energy agendas. The additional carbon dioxide produced by new coal-fired power plants may destroy whatever emission reductions are made by other countries. The research investigates the environment, green economy, and Sustainable Development Goals, which contribute to a future issue. It studies the endeavour and precincts of green finance and acknowledges issues of the globe vis-à-vis green finance, as well as elucidations, using living research and attempts to provide a novel vantage point on green economy as an operational sledgehammer of sustainability.

Key words: Environment, Green economy, Sustainability Development Goals

INTRODUCTION

Global environmental transformation is one of the mega challenges of our times. Central banks and regulators have acknowledged the need to address financial risks related to global environmental change through prudential policies and their role in aligning the financial system with the Paris climate targets and other sustainability goals.Dwindling natural resources, degraded environment and rampant pollution are hazardous to public healthand cause challenges to sustainable economic growth as rapid economic development is often achieved at the expense of the environment. To protect and substantially improve the environment, nations around the world have been increasingly focusing on the use of eco-friendly technologies.

Bottom-tier households in the economic pyramid have fewer resources to protect themselves from negative shocks. Hallegatte et al. (2016) discuss the dangers in detail: "Poor people and poor countries are exposed and vulnerable to all types of climate-related shocks, including natural disasters that destroy assets and livelihoods; waterborne diseases and pests that become more common during heat waves, floods, or droughts; crop failure due to reduced rainfall; and food price spikes that follow extreme weather events." When a flood destroys a microbusiness, a drought decimates a herd, or tainted water sickens a child, for example, climate-related shocks affect individuals who are not poor but are vulnerable and can drive them into poverty. Green finance refers to any structured financial activity aimed at improving environmental results. Green finance in the context of banks refers to financial products and services that take environmental considerations into account during loan decision, post-monitoring, and risk management; it encourages environmentally responsible investment and propels low-carbon technologies, projects, industries, and businesses. The ASEAN Green Bond Standards, which are based on the ICMA Green Bond Principles, strive to promote transparency, consistency, and standardisation to lower issuance and investment costs.

The financing of public and private green investments, including preparatory and capital costs in environmental goods and services such as water management, biodiversity andlandscape protection, prevention, minimization, and compensation of environmental andclimate damages such as energy efficiency, is a key topic in the discussion of economic growth sustainability. It refers to the precise financial methods utilised for environmentally friendly projects or efforts that take climate change into consideration. Green building, waste

management (including recycling and proper disposal), and energy conversion are all examples of ecologically friendly endeavours. They also include clean transportation, which reduces greenhouse gas emissions.

Furthermore, under the disclosure requirement for green debt securities, the projects identified as sustainable include biodiversity preservation, sustainable forestry and agriculture, sustainable waste and water management, and climate change adaptation (SEBI 2017). The operational costs that encourage the implementation of environmental protection, mitigation, or adaptation projects and initiatives, such as renewable energy feed-in tariffs, financial system components dealing specifically with green investments, such as the Green Climate Fund, or financial instruments for green investments, such as green bonds andstructured green funds, as well as their specific legal, economic, and political implications, are all included.

REVIEW OF LITERATURE

Renewable green energy, according to Eyraund and Wane et al. (2011), has become a global phenomenon. Concurrently, the geographical composition of green energy has altered substantially in recent years. In 2009, China became the country with the greatest renewable energy investment, and in 2010, it invested more than Europe as a whole. Milan (2012) explored the idea of Sustainable Finances from a range of viewpoints and research methodologies. First, he summarised the relevant literature to grasp the fundamental features of sustainable finances and concluded that Sustainable Finances are a dynamic concept, a process rather than a final goal with many beneficial results, and the notion of sustainable finances is still in its early stages.

Global carbon emissions, according to Fevero and Massetti et al. (2012), cause a low-carbon economy. Shipochka (2013) found that personal values and beliefs are a critical factor for green investors when considering investment since the concept behind green investments is built on some personal values and beliefs. According to the author, future energy prices will not be cheaper since they will demand greater capital expenses than more traditional energy sources. Green investments, according to the author, are not a bubble because they provide analternate source of supply and have long-term sustainability.

Green construction, according to Chowdhury and Datta et al. (2013), saves energy andprotects the environment. Green financing is an important tool for reducing greenhouse gas emissions. According to the author, green finance has the same ability to create returns as

traditional instruments. According to Dubey and Venkatesh et al. (2013), green procurement strategies have a positive impact on market share and consumer satisfaction. According to green procurement, effective buying management helps to gain consumers, strengthen the supply chain, and improve customer service.

Sustainability, according to Wyk (2014), is a superior approach for architecture and construction because it recognises people and institutions as the primary beneficiaries of change. A green building is a method of merging construction activity with environmental sustainability. The author went on to argue that green construction standards are by sustainability needs. According to Sudhalakhmi and Chinnadori (2014), green finance connects the financial sector, environmental development, and economic success, making it a critical component of low-carbon green growth.

According to Acheampong (2016), the circular economic system (CE) is a catalyst for long-term event and economic growth that may shift society away from the linear paradigm of take-make-waste and towards a circular one of reduce-reuse-recycle. Government support is no longer required for the success of circular economy organisations. According to Welling (2017), green investments are significant because they reduce carbon emissions by delivering low-cost power, improving energy performance, and sequestering carbon. The author, however, also discussed the substantial obstacles connected with green financing.

These difficulties include fast technology advancement, reliance on government assistance, considerable uncertainty, and, most crucially, the interaction of so many diverse people. Green money in India and its worth were shown in exceptional ways by Joseph (2017). According to Christensson and Skagestad (2017), sustainable and conventional funds performcomparably in developing countries. Because of negative screening, sustainable funds have far lower market portfolio exposure than ordinary funds. According to Cui (2017), green credit is a rising product or service that is expanding faster than total loans.

Credit risk (i.e., the bank's NPL percentage) can be reduced by allocating a significant share of the loan portfolio to green credit. When Green Credit Policy is adopted, it creates significant advantages. When green credit growth rates increase, the author also discovered a positive link between sustainability performance and credit risk. Lemmen (2017) compared previous financial instruments to green bonds and found that investor interest in green bonds is growing, and that the proceeds of green bonds are being channelled into ecologically favourable initiatives. The author noticed that the importance of green finance is growing

over time, and as a result, it is feasible to say that investing in Green Bonds is a step forward in the fight against climate change. Stojanovic and Illic (2018) paid special attention to the development of market mechanisms and policy formulation of green finance for long-term sustainable development.

Harper Ho (2018) analyzed China's green credit policies as a test of banks' abilities to monitor and price environmental and social risks. He showed that China's top banks had issued more green loans in recent years. He also showed that China's green finance policies are driving top-tier financial institutions to establish environmental and social credit risk monitoring systems. These new developments show the importance of banks' monitoring role as gatekeepers for green finance, especially in debt-heavy countries like China. According to the findings of Bielinski and Mosionek et al (2019), even though the European Union is inthe vanguard of the global movement toward a more sustainable economy, there is a significant increase in the amount of investment that is required in fields such as building renovation and energy efficiency, the generation and transmission of renewable energy, and low-carbon transportation. They went on to emphasize that the private sector has the potentialto turn into the primary source of financing for pre-environmental initiatives. Novkovska (2019) contributed this work to the fields of the hidden economy and green economy. The author revealed that the relative efficiency of the hidden economy swings at huge intervals in comparison to the normal economy. This indicates that there are major disparities between the two economies. Concurrently, the author discovered that a high extent of the hidden economy is associated with low energy efficiency. This finding suggested that policies should be established and further developed in a coordinated manner to reduce the extent of the hidden economy and increase energy efficiency. In addition, the author found that a high extent of the hidden economy is associated with low energy efficiency. Pereira and Pereira (2019) concluded that feeding in tariff finance by a carbon tax leads to unfavourable macroeconomic and regressive distributional welfare effects. On the other hand, he defined that using the revenue from the carbon tax to finance a feed-in tariff is an improvement over the simple case of a carbon tax alongside all the relevant policy dimensions and that although the feed-in tariff mechanism brought about the carbon tax, it still results in a better environment. Shrimali (2019) presented initial insights into the clean energy listed equity as aseparate asset class in existing portfolios. The author targeted on the price of listed renewablestrength fairness in a static portfolio optimization trouble. The primary finding of this study was that classifying renewable power listed equities as a separate asset class inside an

investor's portfolio did not appear to add value to that portfolio. This was the conclusion reached by the researchers. On the other side, the remarkable assets‘ magnificence may be an indication that there is a need to implement more cutting-edge methods to demonstrate value. Stojanovic and Djukic (2019) analyzed the sustainability of green economy financing, for figuring out how and to what extent the green financial system is financed in the Republic of Serbia, the international locations of the ASEAN Association and what the financial contraptions for accomplishing the green boom are. The evaluation is positioned on inexperienced bonds, and modern-day securities, in addition to the effect they have got on global projects for using renewable electricity sources. Su and Liao (2019) diagnosed based on the past ten-year data of the stock return of energy efficient firms and with the help of a high dimensional model of time series that there are three change points in the common components of stock return on energy firm, but the idiosyncratic component does not have change points. Tuminen and Reda (2019) proposed the CEA (cost-effective analysis) approach and illustrated its value in valuing investments in buildings that use less energy. According to the author, the energy saved under the low investment scenario cost 0.26 USD/KWH, compared to 0.60 USD/KWH under the high investment scenario. The author went on to say that a methodical evaluation of the cost-effectiveness of different energy efficiency initiatives would enable one to identify those that were most efficient in terms of the amount of energy saved relative to the amount of money spent. According to YoramKrozer (2019), public savings can be used to make annual investments in renewable energy and energy efficiency five times higher than they are now. This will enable the world to transition to a low-carbon economy. It will aid in the transition to a low-carbon economy provided favourable conditions are established, the activation of these savings is sufficiently significant, and it pays off in terms of cost-reducing technological improvement. The Global Commission on Adaptation (2019) divides adaptation components into three categories:reduction, preparedness, and restoration. Climate change may be reduced and avoided by planning land use, fostering natural alternatives to safeguard people and property, and managing the permanent migration of vulnerable populations. Kling et al. (2021) suggest that climate vulnerability affects enterprises' access to capital and boosts financing costs using panel data from 71 countries between 1999 and 2017. MSMEs may have difficulty gaining access to banking services and capital markets. Climate change adaptation includes strategies and initiatives from both the public and commercial sectors.

RESEARCH GAP

Frequent researchers have validated the importance of environment, green economy and SDG for the well-being of a nation in the past; however, the preponderance of these studies have been conducted in western contexts with a drought of research in Indian environments. Research on the significance of sustainable development and its relationship to the economy must be focussed towards an examination in the Indian context.

SCOPE OF THE STUDY

Investors, legislators, and firms in the financial sector will discover it very supportive to study sustainable development and how it is connected to the economy. The investors who are more concerned in this field will be getting advantage from the exploration into the benefits of sustainable development measures and their suitable execution.

STATEMENT OF THE PROBLEM

The challenge of striking a balance between the safeguarding of the environment, for human benefit, and the progression of industry and agriculture for human benefit arises persistently. The whole world should be aware of how important it is to preserve our earth, soil, water resources, forests, flora, and fauna while at the same time, advancing the progress of infrastructure.

OBJECTIVES OF THE STUDY

1. To understand what is sustainable development goals and its importance
2. To inform the methods of reducing all sorts of pollution which helps to save the endangered species in the globe

THEORETICAL STUDY OF GREEN FINANCE

The relationship between environmental deterioration, vulnerable populations, social tensions and inequalities, and financial stability is depicted visually in the diagram. As was mentioned, vulnerable people can experience the effects of climate change and environmental deterioration right away. Climate change and environmental degradation can have a negative influence on social equity and contribute to intra-society conflicts and tensions by endangering the livelihoods and assets of disadvantaged groups. The environment may suffer severe harm as a result of the acts of lower-income households and MSMEs since they lack

the resources and capacity to reduce their environmental impact. The ability of disadvantaged populations to defend themselves against the effects of environmental change is limited by social injustice and exclusion from economic opportunities.

There is a link between environmental deterioration, vulnerable populations, social tensions and inequality, and financial stability. As previously said, vulnerable individuals can immediately feel the consequences of climate change and environmental deterioration. Climate change and environmental degradation can have a detrimental impact on social fairness and contribute to intra-society disputes and tensions by jeopardising disadvantaged groups' livelihoods and assets. Lower-income families and MSMEs may cause significant environmental damage because they lack the means and capacity to decrease their environmental effect. Social inequality and economic exclusion hinder disadvantaged communities' ability to protect themselves against the consequences of environmental change.

Initiatives to combat climate change may meet fierce criticism if they do not address the socioeconomic realities of certain vulnerable communities. A fair transition would be a pipe dream unless MSMEs' entrepreneurial potential was increased and households at the bottom of the pyramid were empowered. Increasing societal tensions and disparities, for example, endanger financial institutions' clients, have an influence on loan repayment, or produce an uncontrolled transition. Furthermore, the government's efforts to improve social injustice and stagnant income among lower-income groups by expanding loan access may jeopardise financial stability.

Problems faced due to environmental degradation

Although climate change affects everyone, those at the bottom of the economic pyramid are expected to suffer the most. This is correct both domestically and globally. Emerging markets and developing economies (EMDE) are more vulnerable to climate change than developed nations due to location, population pressures, and a lack of resources to participate in adaptation and mitigation efforts. As early as 2003, the Asian Development Bank observed that climate change was worsening existing risks and vulnerabilities, such as those linked to ecosystem goods and services, water shortages, agriculture and food security, forced migration, conflicts, and involuntary displacement. ADB and colleagues (2003).

Diagram-1 Environmental Degradation

Inequalities within a nation

Within each country, there exist discrepancies that reflect differences in each country's vulnerability to climate change. Many low-income households live in low-elevation coastal areas and unfavourable agricultural regions, putting them at greater risk from climate change and its consequences. Flooding, droughts, natural catastrophes, and climate change-related tragedies affect them more than higher-income households (Barbier and Hochard 2018).

Vicious Cycle and Social Injustice

Unequal exposure to environmental dangers risks igniting a vicious cycle in which social inequities are worsened because disadvantaged communities face a disproportionate share of the harmful consequences of climate change (Islam and Winkel 2017). Despite the fact that its links to poverty are complicated, multidimensional, context-specific, and difficult to quantify (Skoufias et al. 2011, Leichenko and Silva 2014), researchers generally agree that climate change has a regressive effect on economies, harming low-income households more than the wealthy.

No.	Name of the Species	Places found	Threats faced
1	Polar Bear	Artic Region	• Loss of habitat from climate change • Toxic pollution • Oil exploration
2	Adelie Penguin	Antarctica Region	• Climate change • Toxic pollution • Oil spills
3	Staghorn Coral	Bahamas Florida Caribbean	• Ocean warming • Pollution
4	North Atlantic Cod	Atlantic ocean	• Ocean warming • Pollution
5	Orange Spotted File Fish	Indo-Pacific oceans	• Ocean warming • Pollution

Table-1 Examples of endangered species

Global Commission on Adaptation (2019)

The Global Commission on Adaptation (2019) categorises adaptation components into three categories: reduction, preparedness, and restoration. Planning for land use, supporting naturally existing protections for people and property, and managing the permanent migration of susceptible population segments are all critical components of attempts to mitigate and prevent the harmful consequences of climate change. Climate change vulnerability may be reduced by developing hardier crops, more flexible agricultural practices, and structures and infrastructure that are resistant to the effects of climate change. Public agencies can improve their degree of preparedness for the effects of climate change by establishing early warning systems, taking part in the planning process, andincreasing the size of first responder and evacuation teams. Last but not least, once natural disasters have caused havoc on the economy, efforts geared toward restoration and recovery are necessary.

Sustainability Development Goals

Diagram-2 Sustainability Development Goals

Diagram-3 Four Ps of Green Economy

Sustainable Ecosystem Management Criteria		
1	Current utility	Provision of the goods or services expected from it with reasonable efficiency (e.g., preventing erosion, detoxifying wastes)
2	Future potential	No disruption of the processes that generate and maintain the desired composition and structure of the ecosystem
3	Containment	Do not degrade areas beyond the system‘s borders
4	Resilience	Self-maintenance and self-regeneration capacity

Table -2 Sustainable Ecosystem Management Criteria

Conclusion

The effects of a green economy and sustainable development goals on human welfare have been examined in this paper. According to the findings of the empirical research, organisations' mandates for promoting sustainable growth and mainstreaming green financingare typically effective. However, some businesses may not overtly or implicitly announce or suggest any sustainability aims to support the goals of sustainable development and green financial operations. The bulk of these activities aim to include environmental and climate- related risks into core policy implementation frameworks to meet the aims of pricing and financial stability. Different organisations will undoubtedly handle the climate issue in different ways. However, it should be evident that efforts done to combat climate change will have a significant impact on economies, with potentially major consequences for the macroeconomy's and financial system's stability. The growth of a green economy, as well as the achievement of sustainable development goals, are both affordable and beneficial to society.

References:

1. AbdulrasheedZakari, Irfan Khan (2022), The Introduction of Green Finance: A Curse or a Benefit to Environmental Sustainability?
2. Aparna B Rathore (2019)Carbon Accounting: A Tool To Mitigate Climate Change For A Greener World, International Journal of Education, Modern Management,Applied Science & Social Science (IJEMMASSS) 6ISSN : 2581-9925, Volume 01, No. 03, July - September 2019, pp.61-65
3. BIS Innovation hub, (2021), A vision for technology-driven green finance
4. DrBrotoRauth (2013), Bhardwaj and Aarushi Malhotra Bharati, Green Banking Strategies: Sustainability through Corporate Entrepreneurship
5. David Gilchrist, Jing Yu and RuiZhong (2021), The Limits of Green Finance: A Survey of Literature in the Context of Green Bonds and Green Loans
6. Erwin Saraswati (2020) Carbon Accounting, disclosure and measurement: A systematic literature review, The International Journal of Accounting and Business Society, Vol. 28, No. 2 August 2020
7. EwaDziwok, Johannes Jager (2021), A Classification of Different Approaches toGreen Finance and Green Monetary Policy

8. DrGobindaDeka (2015), Green Banking Practices: A Study on Environmental Strategies of Banks with special reference to State Bank of India
9. Dr G. Nedumaran, M. Manida, M. Baladevi (2020), Impact on Customer Perceptions of Green Banking Process with Special Reference in Rajapalayam Taluk
10. Guang-Wen Zheng, Abu Bakkar Sidiki, Mohammad Masukujjaman and NazneenFatema (2021), Factors Affecting the Sustainability Performance of Financial Institutions in Bangladesh: The Role of Green Finance
11. Hee-JinJin Noh (2010), Financial Strategy to Accelerate Innovation for Green Growth
12. Jeffrey D. Sachs, Wing Thye Woo, Naoyuki Yoshino, and FarhadTaghizadeh-Hesary (2019), Why is Green Finance Important?
13. Jillene Marlowe and Amelia Clarke (2022), Carbon Accounting: A Systematic Literature Review and Directions for Future Research, http://www.aimspress.com/journal/GF
14. KristioRapi, SafiahMaisarah, SekarAyuFirdausiaRambe, Wibisono Chandra and AdhityaRahmana (2021), Green Finance for the Era of Post COVID-19: A Systematic Literature
15. Mariam Al Shamsi, DrHaithamNobanee (2021), Green Investment and Green Finance
16. Meenakshi Sharma, Akanksha Choubey (2020), Green banking initiatives:a qualitative study on the Indian banking sector
17. Muhammad Asif Khan, HammadRiaz, Masood Ahmed, Abubakr Saeed Sushma B S (2021), –Green Finance‖-An Effective Tool to Sustainability
18. Dr. Nannette Lindenberg, (2014) Definition of Green Finance
19. Neeru Kapoor, DrMeenuJaitly, Rishi Gupta (2016), Green Banking: A step towards Sustainable Development
20. Neyati Ahuja (2015) Green banking in India: A Review of Literature
21. NischalRisal, TU Sanjeev Kumar Joshi (2017), Measuring Green Banking Practiceson Bank‘s Environmental Performance: Empirical Evidence from Kathmandu valley
22. Dr K. Nithya Kala, Dr K. Vidyakala, Jamuna. S, (2020) A Study on The Impact of Green Banking Practices on Bank‘s Environmental Performance with Special Reference to Coimbatore City
23. Rambalak Yadav, GovindSwaroop Pathak (2013), Environmental Sustainability through Green Banking: a study on Private and Public Sector Banks in India
24. RBI Bulletin January (2021) Green Finance in India: Progress and Challenges.

25. Sandeep Kumar Rawat, Anu (2020), Recent Advances in Green Finance
26. Sarah Hafner, Prof. Aled Jones, DrAnnela Anger-Kraav Jan Pohl (2019) Closing the green finance gap – a systems perspective
27. Stanley Ngene, Kiran Tota-Maharaj, Paul Eke, Colin Hills (2016) Environmental and Economic Impacts of Crude Oil and Natural Gas Production in Developing Countries
28. Sushma B S (2021) ‒Green Finance‖-An Effective Tool To Sustainability
29. Ulrich Volz (2018), Fostering Green Finance for Sustainable Development in Asia
30. Yuting Qian Jingjie Wang (2018),Study on Carbon Accounting of Power Enterprises in China, Advances in Social Science, Education and Humanities Research, volume 286, 3rd International Seminar on Education Innovation and Economic Management (SEIEM)

Talent On The Move – Unraveling The Dynamics Of Global Migration Of Skilled People

***Jemin Jose K**, B.Com.(Finance), Batch 2021-24, Department of Commerce*
Naipunnya Institute of Management and Information Technology, Pongam, Koratty(E)Kerala
(Affiliated to the University of Calicut)
E-mail:jeminjose10@gmail.com

***Vinayak P S**, B.Com.(Finance), Batch 2021-24, Department of Commerce*
Naipunnya Institute of Management and Information Technology, Pongam, Koratty(E)Kerala
(Affiliated to the University of Calicut)
E-mail:vinayakps203@gmail.com

***Teresa Parackal**, Associate Professor, Department of Commerce*
Naipunnya Institute of Management and Information Technology Pongam, Koratty(E)Kerala
(Affiliated to the University of Calicut)
E. mail:parackalteresa@gmail.com

Abstract:

Kerala, known for its development and economic growth, has the highest literacy rate in India and quality education, healthcare, gender equality, and social justice. However, the state faces high unemployment and increased migration for education and employment. The migration to Gulf countries has decreased, but the number of students and workers seeking opportunities in the global north and European countries continues to rise. This research paper aims to analyze the socioeconomic impacts of skilled migration on Kerala's economy.

***Keywords:** Kerala, migration,youth, skilled workforce, socioeconomic impact..*

INTRODUCTION

This research paper explores the dynamics of skilled migration from Kerala, India, a state known for its skilled workforce. Kerala, known for its high education and diverse skill set, has seen a surge in skilled migration in recent years. Brain drain and migration have some differences. Brain drain means skilled and experienced workforce migrated to other countries. Therefore the government or the society is loosing the amount spend to them by way of education in one side and the other side the public of Kerala is not getting their services. In the case of unskilled youths migrating to other countries for education, the Keralagovernment is not able to collect the amount spend for their education (uptoplustwo level)and the human resources for the future growth of the state. Factors driving skilled migration include employment opportunities, higher wages, global exposure, and access to advanced technologies. The paper aims to analyze the decision-making processes of individuals as they navigate global employment markets. While skilled migration offers opportunities for personal and professional growth, it also raises concerns about socio-economic development, such as brain drain, skill shortages in critical sectors, and potential loss of local talent. The research will also examine strategies and policies that Kerala can adopt to mitigate these negative consequences and harness the benefits of skilled migration for its own advancement.The study contributes valuable perspectives to the ongoing discourse on migration and its implications for regional and global development.

STATEMENT OF PROBLEM

Why so many youth from Kerala choose to pursue their education abroad? Is Kerala transforming into a place primarily occupied by elderly people as more young people leave the state?

Students no longer simply relocate for a degree in the modern world. Long-term quality of life, exposure, and higher living standards are what they seek. Kerala would become a nation of elderly people if the younger generation there keeps migrating abroad by taking out loans and mortgaging their homes. There will be significant societal effects from the brain drain ofa gifted generation.

OBJECTIVE OF THE STUDY

i. To research the causes of the migration.

ii. To examine Kerala's trend of growing migration.

iii. To look into how brain outflow affects society economically.

SIGNIFICANCE OF THE STUDY

Analyzing the skilled migration of Keralans overseas is crucial to understanding the complex relationship between human capital mobility and regional development. Kerala has long been known for its highly educated workforce and high literacy rates, therefore studying skilled migration offers important new perspectives on what motivates people to look for chances outside of their state. Policymakers must comprehend the reasons behind this migration and the difficulties it presents in order to develop solutions that will help Kerala retain talent, close skill shortages, and foster sustainable economic growth. Additionally, the study adds to the larger conversation about global labor dynamics by illuminating the ways in which skilled professional migration affects both the source and the destination regions, promoting a more thorough understanding.

REVIEW OF LITERATURE

- **"Brain Drain in Kerala: Migration Challenges in the Knowledge Economy" by B.A. Prakash (2020):** Prakash's research delves into the concept of brain drain in the context of Kerala's knowledge economy. The study critically examines the implications of skilled migration on the state's intellectual capital and offers recommendations for addressing the challenges posed by brain drain**.**

- **"Dynamics of IT Professionals' Migration from Kerala to the United States" by K. M. Sajad Ibrahim (2018):** Ibrahim's research specifically investigates the migration patterns of Information Technology professionals from Kerala to the UnitedStates. The study examines the factors influencing IT professionals' decisions tomigrate and the impact on the IT sector.

- "**The International Migration of Indian Nurses" by S. IrudayaRajan and M.S. Jayakumar (2017):** Examining the specific case of nurses, this research explores the international migration patterns of healthcare professionals from Kerala. The study provides insights into the challenges and opportunities presented by the migration of skilled healthcare workers. in Kerala.

- **"Youth Migration and Social Change in Kerala" by P. S. Sreejesh (2018):** Sreejesh's research delves into the broader social implications of youth migration from Kerala. The study examines how migration shapes the social dynamics within communities and its impact on traditional structures and values.

- "**Educated Unemployment and Migration: A Study of Kerala" by K.C. Zachariah (2011):** Zachariah's research focuses on the nexus between educated unemployment in Kerala and subsequent migration trends. The study highlights the role of employment prospects in shaping migration choices, particularly among the educated workforce.

- **“Skilled Migration from Kerala: Trends, Motivations, and Impact" by S. IrudayaRajan (2009):** This seminal work provides an early exploration of skilled migration patterns from Kerala. Rajan delves into the push and pull factors influencing migration decisions, shedding light on the socio-economic impact ofskilled individuals leaving the state.

- **"Educated Unemployment and Migration: A Study of Kerala" by K.C. Zachariah (2011):** Zachariah's research focuses on the nexus between educated unemployment in Kerala and subsequent migration trends. The study highlights the role of employment prospects in shaping migration choices, particularly among the educated workforce.

- "**Youth Migration and Its Implications for Kerala's Economy" by S. IrudayaRajan (2013):** This research provides a comprehensive overview of youth migration trends from Kerala. Rajan examines the motivations of young individuals to

migrate, the sectors they are attracted to, and the subsequent impact on the state's economic landscape.

INTRODUCTION TO THE NEW STRATEGY

To address the issue of brain drain caused by skilled migration from Kerala, a novel strategy can be implemented with a multi-faceted approach. Firstly, the focus should be on creating a conducive environment for professional growth within the state by fostering innovation hubs, research centers, and technology parks. This would attract and retain skilled individuals by providing them with ample opportunities to excel in their respective fields. Additionally, establishing partnerships between local industries and educational institutions can lead to the development of specialized training programs and internships, ensuring that the workforce is equipped with the latest skills demanded by the job market. Simultaneously, the government could implement policies that incentivize businesses to invest in Kerala, generating employment opportunities and reducing the allure of migrating for better prospects. By combining these measures, a comprehensive strategy can be crafted to mitigate brain drain and promote the retention of skilled talent within the state, ultimately contributing to its socio-economic development.

RESEARCH METHODOLOGY

This research employs a mixed-methods approach with a focus on descriptive and analytical aspects. The sampling method is convenience sampling involving the selection of 100 participants based on their accessibility and willingness to respond. Data will be collected through both primary and secondary sources to ensure a comprehensive understanding of the phenomenon under study. Primary data will be gathered through surveys and interviews while secondary data will be obtained from relevant literature and existing databases.

The analysis will predominantly involve percentage analysis to quantify and interpret the findings. The results will be effectively presented using graphs and diagrams to enhance visual comprehension. This methodological design aims to provide a well-rounded investigation, leveraging both qualitative and quantitative data to derive meaningful insights and conclusions.

RESULTS AND DISCUSSIONS

Table 1 : Demographic Information on Age of Respondents

Age Of Respondents		
Age Group	No. Of Repondents	% of Respondents
18 - 21	25	25%
22 - 25	60	60%
26 - 29	10	10%
Above 30	5	5%

(Source: Primary Data)

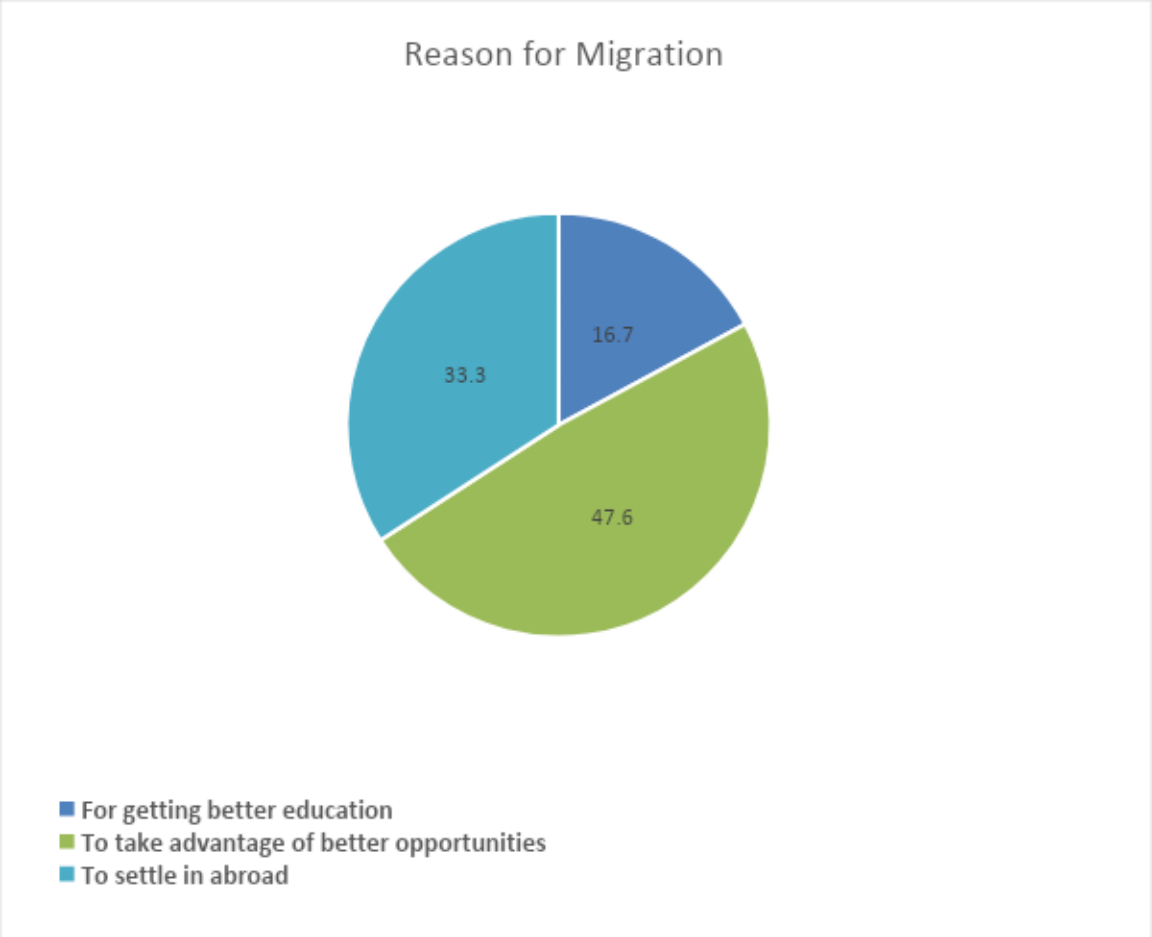
Table 2 : Demographic Information on Gender of Respondents

Gender Of Respondents		
Gender	No. Of Repondents	% of Respondents
Male	57	57%
Female	43	43%

Data Interpretation

According to the data, majority of respondents who had migrated from Kerala are in the age group of 22-25 (60%). Furthermore, males account for a larger proportion (57%) than females (43%).

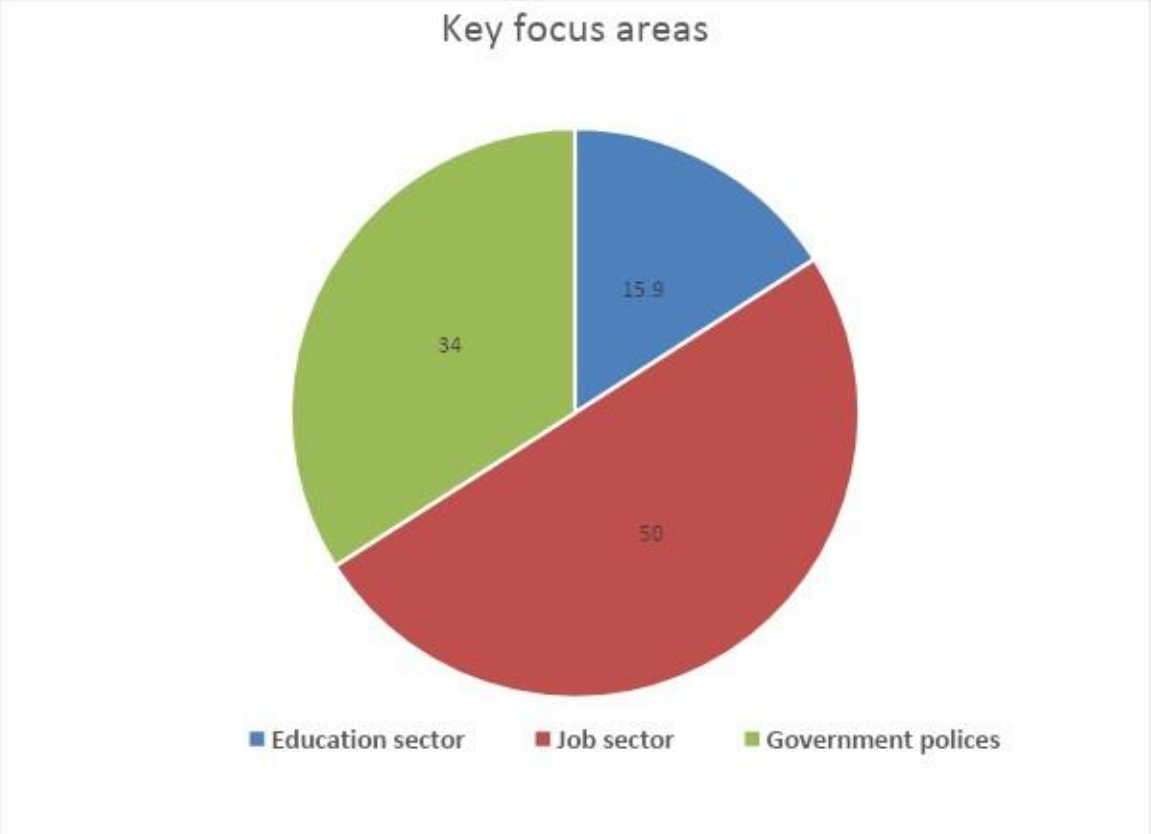
Reason for Migration



Data Interpretation

According to the poll more than 45% of the respondents migrated to other countries for taking advantage of better opportunities. Around 33% of respondents wants to settle in abroad. Remaining 16.7% respondents‘ reason for migration is for getting better education.

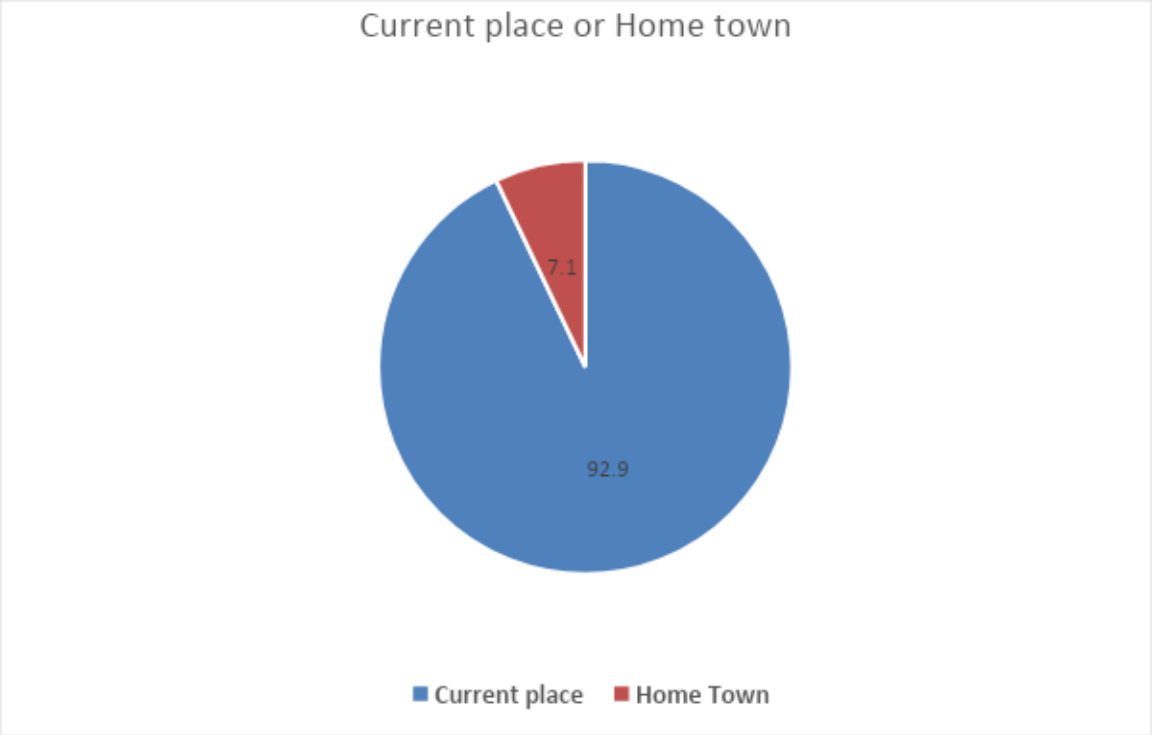
Preference for Areas of Improvement in Kerala for the growth of Youth



Data Interpretation

The majority of respondents (50%) emphasize the job sector as a key focus area for improving the well-being of youth in Kerala, followed by a notable interest in government policies (34%). The education sector is also recognized, even though a lesser extent, at15.9%.

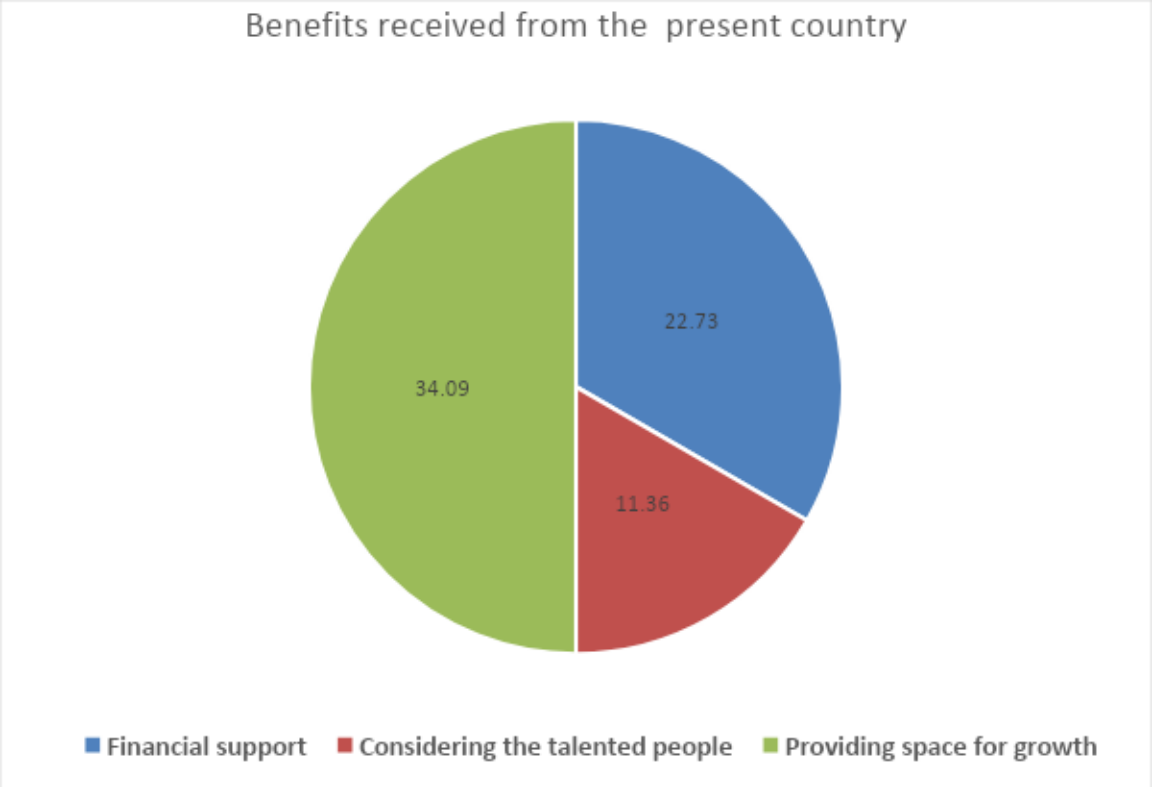
Respondents opinion about current place and home town:



Data Interpretation

According to the study shown above, morethan 90% prefer currently staying country to settle rather than their hometown. They did not want to comeback and settle in Kerala.

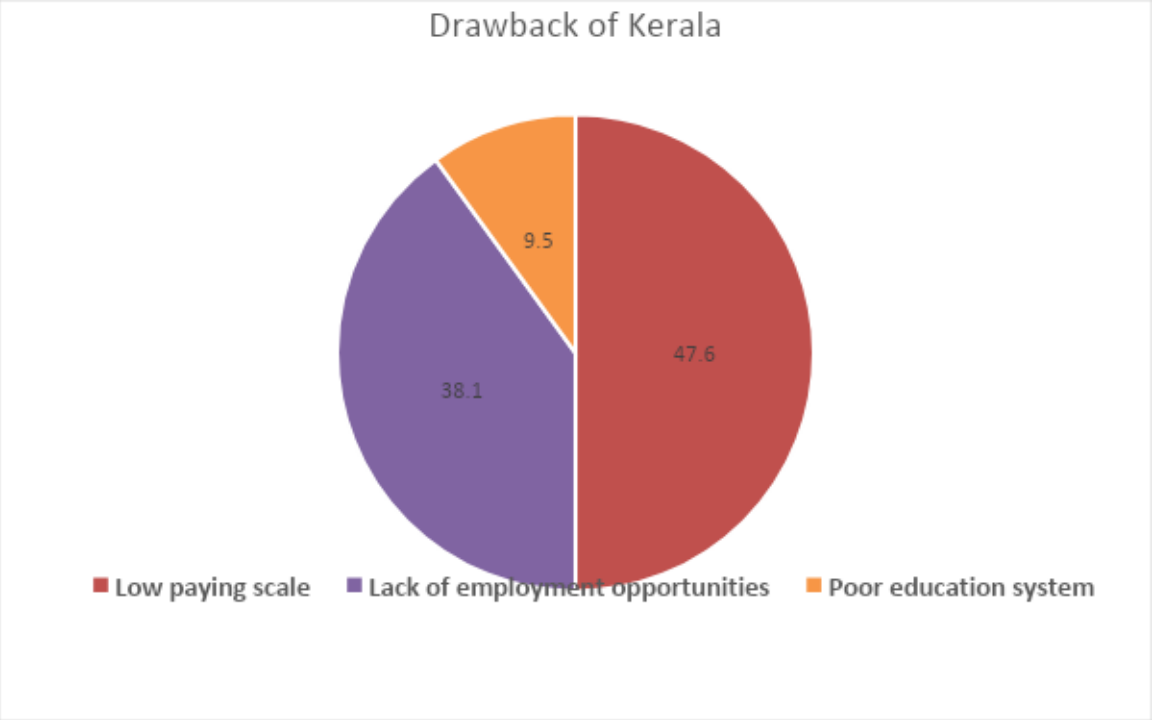
Extra Advantages of Current Residence:



Data Interpretation

The data indicates that a significant proportion of respondents (34.09%) perceive their present country as providing ample space for personal and professional growth. Financial support is identified as a notable advantage by 22.73%, while 11.36% appreciate the consideration given to talented individuals in the current residence.

Evaluating the Development Challenges Facing Kerala's Youth:



Data Interpretation

According to the aforementioned data, more than 45% has polled that low paying scale was the reason why Kerala is not suitable for the growth of youth. 38.1% polled the lack of employment opportunities and 9.5% polled poor education system as the reasons for non- development in the youth in Kerala.

LIMITATIONS

This study is limited to a sample of 100 people who have migrated to other country.

FINDINGS

- According to the analysis, around 60% youth are migrated from Kerala to other countries. Most of the migrated youth are highly educated and experienced skilled labour.
- Keralan students leaving the country with only a high school diploma and no professional experience have to spend at least Rs 20 lakh per year to study at foreign universities. In this way, crores of rupees are transferred from Kerala‘s economy. These students become permanent residents or citizens of these countries. Therefore, money does not come back into Kerala‘s economy as it does from Middle East countries, and it creates various economic and social impacts.
- The Ministry of External Affairs said that 30,948 Malayali students traveled abroad in 2019. Unofficial numbers, however, show that more than 35,000 students from Kerala travel to developed countries each year. (Disquieting Facts of Student Migration : https://www.epw.in/journal/2023/3/letters/disquieting-facts-%C2%A0student-migration.html)
- More than 90% of youth and students who migrated from Kerala does not want to come back and settle in Kerala. They feel better in currently staying country rather than hometown. This causes the lack of human resources for the future development of Kerala.
- Based on the information collected from migrated people, the major reason for their migration is to take advantage of better opportunities prevailing in the other countries. The other reasons are for getting better education and to settle in abroad.
- Migration to specific countries abroad can bring opportunities for higher compensation than in other places, such as Kerala, India. Many people opt to relocate for employment to increase their earning potential, take advantage of better career prospects, and raise their overall living standards. It is discovered that, low paying scale is the major drawback of the Kerala in the growth of youth. Therefore, adequate steps must be taken to strengthen the job sector to retain the skilled youth in Kerala.
- Keralan culture places a strong focus on leading a balanced lifestyle at a comparatively slower pace. However, work-life balance can still be impacted by things like demanding workplaces and lengthy commutes. With shorter workweeks, generous vacation benefits, and a culture that values personal time, work-life balance is frequently highly valued abroad, particularly in Western nations.

CONCLUSION

In conclusion, this research sheds light on the intricate dynamics of skilled migration and brain drain in Kerala. The findings underscore the multifaceted nature of the phenomenon, emphasizing the need for targeted strategies to address the challenges posed by the outflow of skilled individuals. Our educational system does not prepare students for the skills that employers require. The talents that employers are looking for are not the same as those that are taught in our educational system. Furthermore, the research sheds light on the role of education and government policies in shaping migration patterns. Initiatives aimed at retaining and nurturing local talent, coupled with efforts to create an environment conducive to entrepreneurship and research, could help mitigate the negative effects of brain drain. Strengthening educational institutions, fostering innovation hubs, and promotingcollaboration between academia and industry are crucial steps in this direction. As Kerala strives for sustainable socio-economic development, the insights derived from this research can inform policy interventions and initiatives that not only retain skilled talent within the state but also foster an environment conducive to professional growth and innovation. For a number of reasons, over regulation, excessive bureaucracy, the politicization of every process, and the hartals, which are mercifully less as the principal perpetrators are in power. As a result of this youth from Kerala are compelled to move and settle in abroad for the betterment and growth in their carrier.

REFERENCES

- Khadria, Binod. (2006). Migration of Highly Skilled Indians: Case Studies of IT and Health Professionals. Sage Publications.
- Bhagwati, Jagdish, &Dellalfar, Farid. (1973). The Brain Drain and Income Taxation. World Development, 1(1–2), 94–101.
- International Organization for Migration (IOM). (2008). World Migration 2008:Managing Labour Mobility in the Evolving Global Economy. IOM.
- Lowell, B. L., & Findlay, A. M. (Eds.). (2001). Migration of highly skilled persons from developing countries: Impact and policy responses. International Organization for Migration.
- Sana, M. (2010). "Kerala Migration Surveys 2010." Centre for Development Studies, Thiruvananthapuram.