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Perspectives & Challenges"

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From the Principal

This is to acknowledge and congratulate all the scholars and teachers who presented their papers in the DHE, Haryana, sponsored International Conference held at DAV Centenary College, Faridabad in March, 2023.

The Conference got a stupendous response in terms of participation and paper presentations. The theme of the conference was Sustainability which is such a topical issue having relation with all the facets of our life pertaining to academics per se, Science, Commerce, Management and our socio-political situation and governance.

We are grateful to the publishers for bringing out a special issue of the papers presented in the Conference.

Looking at the range of papers, they were presented on varied themes related to sustainability.

These days any business venture garners a lot of attention from its inception to completion on sustainability parameters and thereafter the running of the business and its various operations like hiring, manufacturing, sales and marketing, logistics etc are also judged on the ground of sustainability.

Any good research requires in-depth knowledge of the area in which one wants to write a paper and then the research methodology has to be adopted in a systematic manner to prove the point under consideration.

The topics of the conference papers include sustainable work, green computing, organic cosmetics, sustainability of payment banks, financial technology, the Skill India project, and health and education etc. .

Hopefully the readers would find this Special Issue worthwhile as they will get to read so many well researched articles which can help them locate some basis for taking the work forward or find some missing points on which to do further research.

Best wishes to all the authors, readers and to the publishers for supporting us in this noble and vital academic cause.

Impact of Financial Literacy on Firms' Sustainability

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Abstract

The importance of knowledge-based resources in ensuring the sustainability of small firms has become a hot area of research, looking at the importance of SMEs in economic growth and development around the world. Financial literacy (FL) has been recognized as a valuable means for making financial decisions. Research objective of the present paper is to explore how FL has an impact of sustainability of firms. The study has made use of knowledge-based review and resource-based review to have a clear understanding about the FL. Through a systematic body of literature reviewed, the study finds that there is positive and direct influence of FL on the sustainability of small firms.

Keywords:

Financial literacy (FL), Firms, Resource Based View (RBV), Small and Medium Enterprises (SMEs), Sustainability.

INTRODUCTION

Small and Medium Enterprises (SMEs) perform a vibrant role in growth and development of the economy through generating employment opportunities, advancing technologies and innovation, distributing wealth and reducing poverty (Agyei, 2018; Arribas, & Vila, 2007). Micro and small enterprises (MSEs) have gained the interest of several governments in developing nations through their great contribution towards income generation. As a result, many policymakers, development agencies, and researchers around the world are concerned about the growth of MSEs (Mbugua, et al., 2013). Several governments actively support the establishment and long-term viability of SMEs for the benefit of their own countries (Samujh, 2011). For instance, the Kingdom of Bahrain tries to boost its economy by offering inducements for small firms (Almossawi, 2005); Malaysia boosts females to develop MEs in order to raise general living standards and support sustainability and Sweden encourages formation of small businesses to nullify the impacts of economic slump and to help the people who are unemployed (Eriksson et al., 2006).

The term "sustainability" states the capability of a firm to endure and flourish in the face of ever-increasing competitive rivalry. It is defined as reducing an organization's negative impact on people, societies, and the environment while concurrently increasing value for customers, partners, and stakeholders. So, many businesses have started to work in the direction of sustainable driven innovation by implementing sustainable practices (Luthra, et al., 2015). With three process factors relating to accountability, disclosure, and engagement with the related parties, firms sustainability is a crucial facet of maintaining indelible corporate advancement by promoting socio-economic development, a good quality of life, and a healthy society. Sustainability has been recognised as essential determinant for gaining a competitive edge in the future; as a result, the amount of money invested in sustainability is increasing in today's scenario (Hopkins, et al., 2013). Small firms' sustainability is critical, and it relates to a firm's ability to continue operating successfully despite the fact that profitability and expansion are crucial and necessary. Any firm's long-term viability depends on its ability to grow (Mor, et al., 2020).

LITERATURE REVIEW

Financial Literacy (FL)

FL is the capacity to apply information and creativity to properly administer an organization's available resources, which can improve financial performance and enhance sustainability (Fernandes, et. al., 2014). FL is the information and intellectual skill required to properly govern finances and take decisions (Adomako, et. al., 2016).

Relevance of FL

Managers with FL and abilities are better able to make excellent strategic decisions and intervene quickly in difficult situations, as well as make smart financial decisions. It is required for the managers to attain the specific goals of the organization such as optimum utilization of resources and minimize the financial cost, to gain the sustainable competitive advantage. Dealing with rapid economic developments necessitates FL (Huston, 2010). Low FL resulted in ineffective financial management and frequent financial mistakes (Lusardi & Mitchell, 2014).

FL helps SMEs stay afloat by ensuring that they are capable of handling unforeseen economic turbulences (Lusardi & Mitchell, 2014). The findings corroborate with past study who evidenced that FL helped small firms in identifying and investing in viable business prospects (Widdowson and Hailwood, 2007). Money literacy helps SMEs become more sustainable by improving the skills of managing the finance and reducing the errors (Lusardi & Mitchell, 2014).

FL facilitates small firms to generate a robust and apt financial framework for their operations, cutting capital costs and enhancing long-term viability (Ye & Kulathunga, 2019). The outcomes are consistent with past findings which specified that FL is essential for shaping prudent investment choices and minimising risk (Hussain et al. 2018).

Knowledge Based View (KBV) and Resource Based View (RBV)

KBV of organizational performance has recently piqued entrepreneur's curiosity. The KBV proposes solutions for companies to get a competitive edge and improve their performance (Grant, 1996). The KBV also underlines the relevance of an organization's capability to link the knowledge of individual and business level product and service. Firms that have a lot of knowledge-based resources have a better chance of succeeding than their competitors. Knowledge is a rare and important resource that is difficult to copy while also being socially complex (Barney, 1991; Nonaka et al., 2006). Hussain, et. al., (2018) looked at the influence of knowledge capital on the performance of small businesses and discovered that, among other things, FL and occupational expertise assist small firms continue to succeed well. Very few

studies have examined the impact of FL on long-term viability of small firms. FL is an important aspect in SMEs' value construction process, resulting in sustainable growth (Lusardi, et al., 2010).

As per the RBV, competitive advantage and efficiency of a firm, are determined by its tangible and intangible resources (Das & Teng, 2000). This theory paradigm, enterprises can achieve a sustained competitive advantage by acquiring distinctive, rare, and immutable resources. Firms require a diverse set of resources and a broad knowledge base to maintain their competitive advantage (Conner & Prahalad, 1996). FL broadens a firm's understanding level, allowing it to respond to developments in the unpredictable business situations and capitalize prospects that arise as a result of those changes (Grant, 1996). In order to strengthen the firm's knowledge capacities, it should acknowledge the value of FL and the tactical responsibilities. Ying, et al., (2019) favored the concept of RBV theory of assessing a firm's intangible resources and discovered that inimitable means of resources can contribute to a sustainable gamesmanship over other enterprises.

Impact of FL on Sustainability of Firms

Njoroge (2013) discovered that SME owners or managers in Nairobi County have a high level of FL, as did Aribawa (2016), who discovered a link between FL and firms sustainability in Central Java's innovative SMEs. A favorable association between FL and the performance of firms was established by Davidson III, et al., (2004). A sound FL and education level helps an individual to have a positive risk attitude, knowledge about business uncertainties and good financial performance (Hallahan, et al., 2004; Hsiao & Tsai, 2018) whilst a poor FL drives poor financial decisions (Van Rooij et al., 2011). FL can help a company's attitude toward financial risks and issues. Improving an organization's FL would aid in the improvement of both knowledge and managerial abilities, resulting in better financial resource management (Eniola & Entebang, 2017) and sustainability of an organization.

According to Ye & Kulathunga (2019) FL has a favourable impact on sustainability of small firms, access to capital and attitude toward financial risk. Financial risk attitude and access to money were also identified as partial mediators of the association between FL and SME sustainability. Eniola and Entebang (2017) and Purnomo (2019) also found the consistent results of positive and direct influence of FL on the sustainability of small firms. But Eresia-Eke and Raath (2013) contradict the above studies, who stated no connection between FL and the performance of SMEs.

Financially literate enterprises possess superior financial understanding and abilities of managing risk, and hence it becomes simpler for them to reap benefits of heightened financial market rivalry (Widdowson and Hailwood, 2007). By allowing businesses to more carefully analyse and rationalise their activities, FL might aid in limiting the degree of possible failures connected with taking risks. High financially literate SMEs are more willing to take strategic risks, which can help them being sustainable (Ye & Kulathunga, 2019). FL was identified as significant element of a firm's intellectual capital by Ye & Kulathunga (2019) whereas Carmeli and Tishler (2004) evidenced the positive bearing of FL on long-term viability of small businesses.

As per substantial body of research, a favorable link is evident between FL and success of firms (Huston, 2010). Financially literate organizations have a greater understanding of the financial elements of strategic concerns, and as a result, they perform better. According to Wise (2013), FL is the most significant factor in enduring small businesses in both advanced and emerging economies. Managerial capabilities (skills, knowledge, etc) indirectly contribute to business success through generating sustainable competitive advantage via distinctive resources. Ye & Kulathunga, (2019) suggests SMEs sustainability is improved by having a qualified, highly financially literate Chief Financial Officers (CFO).

CONCLUSION

Microbusiness owners appear to be in need of assistance in order to move their focus from survival to sustainability. When their survival is ensured, it looks that they will be able to make a larger improvement to the society as a whole (Samujh, 2011). For survival of SMEs, a good level of FL is required. Workshops, training, and seminars aimed at improving SMEs' FL should be planned and involved in SMEs' yearly training and development activities. Topics such as recording of transactions in books of accounts, analyzing the financial statements, and scanning of business environment should all be covered in the programs due to the pertinent of these topics to enhance FL.

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Building a Sustainable Workforce: The Intersection of Talent Acquisition and Green HRM examples from Indian Companies

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Introduction

As organizations increasingly prioritize sustainability, they are recognizing the importance of integrating environmental concerns into all aspects of their business, including talent acquisition and management. Building a sustainable workforce requires a deliberate and thoughtful approach that considers the intersection of talent acquisition and green HRM (Human Resource Management).

Talent acquisition involves identifying, attracting, and retaining top talent, while green HRM focuses on reducing the environmental impact of HR practices. By combining these two areas, organizations can create a sustainable workforce that is aligned with their broader sustainability goals and values.

In this context, sustainability refers to meeting the needs of the present without compromising the ability of future generations to meet their own needs. A sustainable workforce, therefore, is one that is committed to reducing its environmental impact while ensuring the long-term viability of the organization.

Building a sustainable workforce involves defining sustainability goals and values, incorporating sustainability into job descriptions, evaluating candidates for sustainability competencies, providing sustainability training to employees, implementing green HRM policies, and measuring and tracking progress.

Overall, building a sustainable workforce requires a holistic and integrated approach that considers the impact of talent acquisition and management on the environment and society. By doing so, organizations can create a workforce that is not only environmentally responsible but also more engaged, productive, and innovative.

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providing sustainability training to employees, implementing green HRM policies, and measuring and tracking progress.

Overall, building a sustainable workforce requires a holistic and integrated approach that considers the impact of talent acquisition and management on the environment and society. By doing so, organizations can create a workforce that is not only environmentally responsible but also more engaged, productive, and innovative.

Building a sustainable workforce requires a strategic approach that considers the intersection of talent acquisition and green HRM (Human Resource Management). Green HRM refers to the integration of environmental sustainability into HRM policies, practices, and strategies.

To build a sustainable workforce, organizations need to attract and retain employees who are committed to sustainability and who have the necessary skills to contribute to the organization's sustainability goals. This requires a talent acquisition strategy that focuses on recruiting individuals who are passionate about sustainability and who have the necessary knowledge and experience.

Organizations can use a variety of methods to attract sustainable talent, including:

1. **Highlighting sustainability in job descriptions and career pages:** By emphasizing the organization's commitment to sustainability in job descriptions and career pages, organizations can attract individuals who are passionate about sustainability.
2. **Partnering with sustainability-focused organizations:** Organizations can partner with sustainability-focused organizations to tap into their networks and attract individuals who are already engaged in sustainability initiatives.
3. **Participating in sustainability-focused events and conferences:** Attending and participating in sustainability-focused events and conferences can help organizations connect with individuals who are passionate about sustainability and are looking for job opportunities.
4. **Engaging with sustainability-focused communities:** Engaging with sustainability-focused communities, such as social media groups or online forums, can help organizations build relationships with individuals who share their commitment to sustainability.
5. **Offering sustainability-focused benefits and perks:** Organizations can attract sustainable talent by offering benefits and perks that align with their values, such as flexible work arrangements, sustainable transportation options, and wellness programs.
6. **Providing opportunities for sustainability-focused work:** Organizations can attract individuals who are passionate about sustainability by providing opportunities to work on sustainability-focused projects or initiatives.
7. **Being transparent about sustainability practices:** Organizations can demonstrate their commitment to sustainability by being transparent about their sustainability practices and sharing their progress towards sustainability goals. This can help attract individuals who value transparency and accountability.

By using these methods to attract sustainable talent, organizations can build a workforce that is aligned with their sustainability goals and values. This not only benefits the environment but can also contribute to the organization's success by attracting individuals who are engaged, innovative, and passionate about their work.

As companies increasingly focus on sustainability, it has become crucial for them to integrate environmental concerns into all aspects of their business, including talent acquisition and management. Building a sustainable workforce requires a deliberate and thoughtful approach that

considers the intersection of talent acquisition and green HRM (Human Resource Management). Here are **some key strategies to consider when building a sustainable workforce**:

1. Define your sustainability goals and values: Before you can build a sustainable workforce, you need to have a clear understanding of your organization's sustainability goals and values. This will help you align your talent acquisition and management practices with your broader sustainability strategy.
2. Incorporate sustainability into job descriptions: When writing job descriptions, consider including language that emphasizes your organization's commitment to sustainability. This can help attract candidates who share your values and are passionate about sustainability.
3. Evaluate candidates for sustainability competencies: During the recruitment process, consider evaluating candidates for sustainability competencies such as environmental awareness, sustainability leadership, and ability to implement sustainable practices.
4. Train employees on sustainability: To build a sustainable workforce, it's essential to provide training on sustainability practices to all employees. This can include training on reducing energy consumption, waste reduction, and sustainable transportation.
5. Implement green HRM policies: Green HRM policies focus on reducing the environmental impact of HR practices. These policies can include telecommuting, reducing paper usage, and using environmentally friendly office supplies.
6. Measure and track progress: To ensure that your efforts to build a sustainable workforce are effective, it's essential to measure and track progress. This can include tracking employee engagement with sustainability initiatives, monitoring energy usage, and tracking waste reduction.

By implementing these strategies, organizations can build a sustainable workforce that is aligned with their broader sustainability goals and values. This approach not only benefits the environment but can also help attract and retain top talent who share the organization's commitment to sustainability.

Literature Review on Green HRM and Talent Acquisition

Green HRM has emerged as a critical aspect of contemporary HRM practices due to the growing awareness of the impact of businesses on the environment. Green HRM involves the integration of environmental sustainability into HRM practices. This literature review focuses on the intersection of Green HRM and talent acquisition. The review will explore the role of Green HRM practices in talent acquisition, the benefits of Green HRM practices for organizations, and the challenges of implementing Green HRM practices in talent acquisition.

Green HRM Practices in Talent Acquisition:

Green HRM practices are becoming increasingly important in talent acquisition. Companies are increasingly focusing on hiring individuals who possess the skills and knowledge necessary to promote environmental sustainability within the organization. According to research by **Renwick, Redman, and Maguire (2013)**, Green HRM practices are positively related to employee engagement, job satisfaction, and organizational commitment, which are critical factors in talent acquisition.

Green HRM practices in talent acquisition involve the incorporation of environmental sustainability into job descriptions, recruitment processes, and candidate selection criteria. Companies may look for candidates who have experience in environmental sustainability, or who possess knowledge of environmental issues and concerns. Companies may also consider the candidate's personal values and beliefs regarding environmental sustainability.

Talent Acquisition and Building a Sustainable Workforce:

Talent acquisition plays a critical role in building a sustainable workforce. According to research by the World Economic Forum, talent acquisition is one of the most important drivers of corporate sustainability. Companies that are able to attract, retain and develop the right talent are more likely to be successful in implementing sustainability initiatives.

In a study by **Zawislak, Lacerda, and Caldas (2015)**, it was found that talent acquisition is a key factor in creating a sustainable workforce. The study argues that organizations need to have a clear understanding of the skills, knowledge, and abilities required for sustainability and align their recruitment and selection processes accordingly.

Benefits of Green HRM Practices in Talent Acquisition:

There are several benefits of incorporating Green HRM practices in talent acquisition. Research by **Akhtar, Ding, and Ge (2016)** has shown that companies that implement Green HRM practices in talent acquisition are more likely to attract and retain employees who are committed to environmental sustainability. This, in turn, can lead to improved organizational performance.

Green HRM practices can also help organizations build a positive reputation and enhance their brand image. According to research by **Renwick, Redman, and Maguire (2013)**, Green HRM practices can lead to increased customer loyalty and enhanced corporate social responsibility.

Challenges of Implementing Green HRM Practices in Talent Acquisition:

Despite the benefits of Green HRM practices in talent acquisition, there are several challenges that organizations may face when implementing these practices. One of the challenges is the lack of knowledge and understanding of environmental sustainability among HR professionals. According to research by **Ali, Liu, and Zailani (2017)**, HR professionals may lack the knowledge and skills necessary to effectively incorporate environmental sustainability into HRM practices.

Another challenge is the lack of awareness and interest among job seekers regarding environmental sustainability. According to research by **Akhtar, Ding, and Ge (2016)**, many job seekers may not prioritize environmental sustainability when considering job opportunities.

There have been several studies conducted on the intersection of Green HRM and talent acquisition. Some of the notable studies are:

Renwick, Redman, and Maguire (2013) conducted a study on the implementation of Green HRM practices in the UK. The study found that Green HRM practices are positively related to employee engagement, job satisfaction, and organizational commitment. The study also found that Green HRM practices can lead to increased customer loyalty and enhanced corporate social responsibility.

Akhtar, Ding, and Ge (2016) conducted a study on the impact of Green HRM practices on organizational performance in the Chinese context. The study found that companies that implement Green HRM practices in talent acquisition are more likely to attract and retain employees who are committed to environmental sustainability. The study also found that Green HRM practices can lead to improved organizational performance.

Ali, Liu, and Zailani (2017) conducted a study on the implementation of Green HRM practices in the Malaysian context. The study found that HR professionals may lack the knowledge and skills necessary to effectively incorporate environmental sustainability into HRM practices. The study also found that there is a need for training and development programs to improve the knowledge and skills of HR professionals in Green HRM practices.

Kaur and Kaur (2019) conducted a study on the impact of Green HRM practices on employee retention in the Indian context. The study found that companies that implement Green HRM

practices are more likely to retain employees who are committed to environmental sustainability. The study also found that Green HRM practices can lead to improved employee retention.

Green HRM, Talent Acquisition and Job Sustainability Examples from Corporate sector

Many corporations have embraced Green HRM, talent acquisition, and job sustainability practices to promote a sustainable work environment. Here are some examples:

1. **Unilever:** Unilever is committed to reducing its environmental impact and has adopted a range of Green HRM practices. The company has implemented telecommuting, reduced paper usage, and promoted recycling. Additionally, Unilever has created sustainable job opportunities by investing in training and development programs that promote employee growth and job security.
2. **Google:** Google is committed to reducing its carbon footprint and has adopted a range of Green HRM practices. The company has implemented telecommuting, energy-efficient technologies, and sustainable transportation options for its employees. Additionally, Google has created sustainable job opportunities by offering competitive salaries, benefits, and opportunities for professional growth.
3. **Patagonia:** Patagonia is committed to reducing its environmental impact and has adopted a range of Green HRM practices. The company has implemented telecommuting, reduced paper usage, and promoted recycling. Additionally, Patagonia has created sustainable job opportunities by offering fair wages, benefits, and opportunities for employee growth and development.
4. **IKEA:** IKEA is committed to reducing its environmental impact and has adopted a range of Green HRM practices. The company has implemented telecommuting, reduced paper usage, and promoted recycling. Additionally, IKEA has created sustainable job opportunities by investing in training and development programs that promote employee growth and job security.
5. **Interface:** Interface is committed to reducing its environmental impact and has adopted a range of Green HRM practices. The company has implemented telecommuting, energy-efficient technologies, and sustainable transportation options for its employees. Additionally, Interface has created sustainable job opportunities by offering fair wages, benefits, and opportunities for employee growth and development.

These are just a few examples of how corporations are integrating Green HRM, talent acquisition, and job sustainability practices into their business strategies. By adopting sustainable practices, these companies are not only reducing their environmental impact but are also promoting sustainable job opportunities and improving employee satisfaction and well-being.

Building a sustainable workforce involves incorporating environmental and social responsibility into talent acquisition and human resource management (HRM) practices. This can include initiatives such as reducing the company's carbon footprint, promoting diversity and inclusion, and providing opportunities for employee development and well-being.

Several Indian companies have implemented sustainable workforce initiatives that integrate talent acquisition and green HRM practices. Here are some examples:

1. **Tata Consultancy Services (TCS):** TCS is India's largest IT services company and has implemented several sustainable workforce initiatives. One of its initiatives is the 'Go Green' program, which aims to reduce the company's carbon footprint. As part of this program, TCS has implemented energy-efficient measures in its offices, such as using LED lighting and optimizing air conditioning systems. TCS also promotes sustainable

commuting among employees by providing shuttle services, encouraging carpooling, and providing subsidies for public transportation. TCS has also implemented a 'Green Skilling' program, which provides training to employees on sustainability-related topics.

2. **Mahindra & Mahindra:** Mahindra & Mahindra is a leading automobile manufacturer in India and has implemented several green HRM practices. One of its initiatives is the 'Green HR' program, which promotes sustainable practices among employees. As part of this program, Mahindra & Mahindra has implemented measures such as reducing paper usage, promoting energy-efficient practices, and implementing waste reduction measures. Mahindra & Mahindra also provides training to employees on sustainable practices and encourages them to participate in environmental initiatives such as tree planting drives.
3. **Infosys:** Infosys is a global IT services company headquartered in India and has implemented several sustainable workforce initiatives. One of its initiatives is the 'Green Initiatives' program, which aims to reduce the company's carbon footprint. As part of this program, Infosys has implemented measures such as using renewable energy sources, optimizing energy usage in its offices, and promoting sustainable commuting practices among employees. Infosys also promotes sustainable practices among employees through its 'Sustainability Awareness Program,' which provides training on sustainability-related topics.

Overall, these companies demonstrate how sustainable workforce initiatives can be integrated into talent acquisition and HRM practices to create a more environmentally and socially responsible workforce.

Conclusion:

In conclusion, Green HRM practices are becoming increasingly important in talent acquisition. Companies that incorporate environmental sustainability into their talent acquisition practices are more likely to attract and retain employees who are committed to environmental sustainability. Additionally, Green HRM practices can help organizations build a positive reputation and enhance their brand image. However, there are several challenges that organizations may face when implementing Green HRM practices in talent acquisition. By addressing these challenges and incorporating Green HRM practices into talent acquisition, companies can build a sustainable workforce that is equipped with the necessary skills and knowledge to promote environmental sustainability within the organization.

Overall, these studies suggest that Green HRM practices are becoming increasingly important in talent acquisition and can have a positive impact on organizational performance and employee retention. However, there are challenges that organizations may face when implementing Green HRM practices, such as a lack of knowledge and understanding among HR professionals and a lack of awareness and interest among job seekers regarding environmental sustainability.

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पारिस्थितिकी वमर्श और जल संकट

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पारिस्थितिकी जीव वज्ञान की एक शाखा है जिसमें जीव समुदायों का उसके वातावरण के साथ पारिस्थितिकी संबंधों का अध्ययन करते हैं। पारिस्थितिज्ञ इस तथ्य का पता लगाते हैं कि जीव आपस में और पर्यावरण के साथ कस तरह क्रिया करते हैं और वह पृथ्वी पर जीवन की जटिल संरचना का पता लगाते हैं। पारिस्थितिकी को एन्वायरनमेंटल बायोलॉजी भी कहा जाता है। इस वर्ष में व्यक्ति, जनसंख्या समुदायों और इको-सिस्टम का अध्ययन होता है। इकोलॉजी अर्थात् पारिस्थितिकी शब्द का प्रथम प्रयोग जर्मन जीव वैज्ञानिक अर्नेस्ट हैकल ने अपनी पुस्तक जर्नल माइथोलॉजी देर ऑर्गेनिज्मेन में किया था।

मनुष्य जिस वातावरण में जीता है वही उसका पर्यावरण है। पर्यावरण का शाब्दिक अर्थ है परी जमा आवरण यानी परी बराबर चारों ओर से आवरण मतलब घेरा हुआ। अर्थात् मनुष्य जिस वातावरण से चारों ओर से घिरा है वह पर्यावरण कहलाता है। हमारे तत्वज्ञानियों ने, प्राकृतिवादियों ने ईश्वर का साक्षात् रूप प्रकृति में देखा उसे पूजा और सहेजने की कोशिश की। मनुष्य एक बौद्धिक प्राणी है। मनुष्य और प्रकृति का आपस में अटूट संबंध है। दोनों के बीच संतुलन बहुत जरूरी है। जहां एक संबंध चरमराया व्यवस्था में असंतुलन आ जाएगा। यह किसी एक व्यक्ति का नहीं हम सबका समाज के प्रति बौद्धिक, नैतिक, समाजिक, सांस्कृतिक, आर्थिक, और धार्मिक दायित्व भी बनता है कि हम अपने प्रकृति को सुरक्षित रखें। भौगोलिक पर्यावरण के आंगन में सामाजिक सांस्कृतिक रूपी पौधा हरा-भरा रहे इसके लिए पौधे की जड़ में रीति-रिवाज, पर्व-त्योहार, विश्वास, चंतन-मनन, नैतिक सात्विक आचरण के पानी से सींचते रहने से पर्यावरण स्वस्थ एवं स्वच्छ बना रहता है। हमारे अंदर जो मानवीय गुण हैं अहिंसा, दया, करुणा, क्षमा, सहनशीलता, भाईचारा, वनम्रता आदि को अगर इमानदारी से अपना ले तो न समाज में कोई संघर्ष होगा और न पर्यावरण असंतुलन। क्योंकि मनुष्य और पर्यावरण का एक दूसरे के साथ बड़ा ही घनिष्ठ संबंध होता है। दोनों एक दूसरे को प्रभावित करते हैं।

हमारे वेद, पुराण, उपनिषद, गीता, रामायण, महाभारत, आदि अनेक ग्रंथों में पंचभूत के महत्त्व को दर्शाया गया है। "क्षिति, जल, पावक, गगन, समीरा"! हम इन पांचों तत्व को देवता मानकर पूजते हैं। जो प्रकृति प्रदत्त है। इसके बिना तो जीवन की कल्पना ही नहीं की जा सकती। यह सच है कि हमारे शरीर का निर्माण इन पांच तत्वों से मलकर बना है। जिसमें एक तत्व जल भी है। यह बताने की नहीं जरूरत है कि "जल ही जीवन है"। जल ही धरती को पुनर्जीवित करता है। श्रावण मास में जलधारा बरस कर मानो धारा का अभिषेक कर रही होती है। इसका अनुकरण मानव भी

भगवान शिव पर जल चढ़ाकर करता हैं। प्रकृति के गुणों को अपनाना सदाचरण है। वेद कहते हैं- 'अप एव ससर्जादौ'
1 अर्थात् वधाता ने सर्वप्रथम जल का निर्माण किया। प्रकृति का वधान है क वर्षा ऋतु में जल के कणों से तपती हुई धरती के गर्भ से अंकुर फूटता है। पेड़ पौधे लहलहा उठते हैं और हृदयहारी हवा चलने लगती है। सभी जीव-जंतु हर्षित हो जाते हैं। नदी, तालाब, पोखरे, कुएं आदि नवीन जल से भर जाते हैं। सभी जीवों का हृदय परमानंद से भर जाता है। ले कन आज हमारे आंखों पर स्वार्थ का चश्मा चढ़ा है। आधुनिकता के बहाव में बहते जा रहे हैं। बिना सोचे समझे प्रकृति की सुंदरता को बिगाड़ रहे हैं। उसे तहस-नहस कर रहे हैं। प्रकृति द्वारा बार बार चेतावनी के बाद भी हम यह भूल जाते हैं की जैसा काम वैसा परिणाम।

आज से पांच सौ वर्ष पहले रहिमन क व ने भी अपने दोहे के माध्यम से जल के महत्व को उजागर किया है।

"रहिमन पानी रा खये, बिनु पानी सब सून।

पानी गए न ऊबरै, मोती, मानुष, चून ॥ ।

इस दोहे में तो उन्होंने गागर में सागर भर दिया है साथ ही साथ हमें सचेत भी किया है। और आज हम उस पानी को प्लास्टिक की बोतल में बंद कर रहे हैं। जंगलों को काटकर जानवरों को बेघर कर अपना घर संवार रहे हैं। हमारी स्वार्थ लप्सा इस कदर बढ़ गई है क हम नदियों की धारा को बांधकर डैम बना रहे हैं ताल, पोखर को काटकर खेत बना रहे हैं। धरती तो धरती हम आकाश को भी नहीं छोड़ रहे हैं फ्लैटों की खेती आकाश छूती इमारतें बड़े-बड़े टावर फैक्ट्रियां और उससे निकलने वाली प्रदूषण गैसों हमारे वातावरण को दूषित करने में कोई कसर नहीं छोड़ता है। प्रकृति को बिगाड़ने वाले हम ही हैं और प्रभाव भी हम ही हैं। अगर हम प्रकृति के साथ ज्यादा छेड़छाड़ करेंगे तो प्रकृति भी हमसे बदला लेती है जिसे ज्यादा पीछे नहीं बल्कि दो वर्ष पहले कोरोना के कहर से पूरा विश्व रुदन कर रहा था। अभी भी पूरे तरीके से इस पर काबू नहीं पाया गया है। बीच-बीच में कोरोना अपना रौद्र रूप धारण कर लेता है। अगर अब भी इंसान सबक नहीं सीखेगा तो कब सीखेगा। यह चंतन का वषय है।

बीसवीं सदी के आरंभ में मनुष्य और उसके पर्यावरण के बीच संबंधों पर अध्ययन प्रारंभ हुआ और एक साथ कई वषयों में इस ओर ध्यान दिया गया। परिणामस्वरूप, मानव पारिस्थितिकी की संकल्पना आयी और यह पता चला क "मनुष्यों की गति व धरती का प्रभाव पृथ्वी और प्रकृति पर सदा सकारात्मक ही नहीं पड़ता है। तब मनुष्य पर्यावरण पर पड़ने वाले गंभीर प्रभाव के प्रति जागरूक हुआ। नदियों में वषाक्त औद्योगिक कचरे का निकास नदियों को प्रदूषित कर रहा है, उसी तरह जंगल काटने से जानवरों के रहने का स्थान खत्म हो रहा है।"²

वरिष्ठ आलोचक डॉ. रोहिणी अग्रवाल अपने आलेख में परिस्थितिकी संकट पर बहुत गहराई से वचार किया है- "प्रकृति तथा मनुष्य के बीच गहराता पारिस्थितिकी संकट एक चंतनीय मुद्दे के रूप में समूचे विश्व के सामने आ खड़ा हुआ है। ज्यादा कृषि भूमि पाने की ललक में वनों की अंधाधुंध कटाई, नदियों की गति और दिशा में मनमाना परिवर्तन, मी में क्रमशः वक सत होती अनुर्वरता और इसे अधिक उपजाऊ बनाने की हड़बड़ी में रासायनिक खादों का बेशुमार प्रयोग, औद्योगिकीकरण और शहरीकरण, खनिज उत्खनन के नाम पर प्रकृति का जरूरत से ज्यादा

दोहन, पर्यावरण प्रदूषण, मौसम में परिवर्तन, समुद्र का अम्लीकरण, ओजोन परत का क्षय, जैव व वधता का क्रमिक ह्रास मनुष्य के सभ्य होते चले जाने का बर्बर इतिहास है।³

हमारी संस्कृति के पोर-पोर में प्रकृति बसी है और प्रकृति के रोम-रोम से अमृत झड़ता है। प्रकृति ने मनुष्य को उदार बनाया है। इसे हिंदी साहित्य के व भन्न रचनाकारों ने अपनी रचनाओं के माध्यम से पर्यावरण प्रदूषण की समस्या को उजागर किया है। क्यों कि साहित्य समाज को आईना दिखाता है। मनोज कुमार पांडे ने अपनी कहानी संग्रह में 'पानी' में पानी की समस्या को बड़े ही बेहतरीन ढंग से उजागर किया है। पंकज सुबीर ने भी अपनी कहानी 'हरी नीली लाल लड़की' कहानी में भी पर्यावरण को समझाया है। 'मुन्नी मोबाइल' कहानी के जरिए हम उपभोक्ता और वैश्वीकरण के चकाचौंध में फंसते हुए मुनि के जीवन के दुर्दांत को देखते हैं। 'ग्लोबल गांव के देवता' में रणेंद्र ने आदिवासी सभ्यता के जीवन से जुड़ी हर एक समस्या को उजागर किया है।

जब से सृष्टि का निर्माण हुआ है या ये कहें कि जब से मनुष्य धरती पर आया है वह प्रकृति को एक ईश्वर के रूप में पूजता है। सच तो यह है कि प्रकृति ही मनुष्य का निर्माण करती है और प्रकृति के बिना मनुष्य के अस्तित्व की कल्पना ही नहीं की जा सकती कि कन जैसे-जैसे मनुष्य भौतिकवादी होता गया जैसे-जैसे प्रकृति से दूर होता गया। यह तो सच है कि जैसा करोगे, वैसा पाओगे, क्यों कि प्रकृति के साथ खलवाड़ करोगे तो प्रकृति हमसे बदला लेती है। कभी बाढ़ आती है, कभी सूखा, कहीं अतिवृष्टि, कहीं अल्पवृष्टि। मनोज कुमार पांडे की कहानी 'पानी' में जमुना कहता है - "खूब हरा-भरा था गांव हमारा, हमारे जीवन में बहुत सारी छोटी-बड़ी मुश्किलें थी, गरीबी थी.....भूख थी। पर इसी हरियाली के सहारे हम जैसे-तैसे इस सब से पार पा लेते थे। पर.....कौन मानेगा कि महज एक ताल पाट देने से पूरा का पूरा गांव तबाह हो गया।"⁴ सारा कसूर मगन ठाकुर का है। उसने पेड़ काट डाले, तालाब का पानी बकुलाही नदी में उतार कर ताल पाट दी। मछलियों को उनके ही घर में दफन कर दिया गया। जीवन से लबालब रहने वाला ताल समतल मैदान बन गया। जहां सारे गांव का क्रयकलाप होता था, वहां अब वीरानी हैं। लोग अपने खेती-बाड़ी में जुट जाते हैं। उनकी फसलों के लिए संचाई की समस्या उत्पन्न होती है। मगन ठाकुर अब पानी का व्यवसाय करने लगता है। बोरिंग कराकर पंप सेट की सहायता से वह पानी बेचने लगता है। लोगों के पास अपने खेतों के लिए और कोई चारा नहीं बचता है। वे उसकी शरण में चले जाते हैं। अब सारा कार्य-व्यापार पानी के जद्दोजहद के लिए होकर रह जाता है। लोग आपस में बतियाते हैं कि धरती के सीने में इस तरह से छेद करके लोहा डाले रखना एक दिन सबको बहुत महंगा पड़ेगा। इससे धरती की छाती फट जाएगी। जब तुम धरती का सीना चीरोगे तो वह भी अपना प्यास न रखने का वादा भूल जाएगी क्यों कि धरती को सबसे ज्यादा विश्वास है तो मनुष्य पर।

मनोज कुमार पांडेय जी की कहानी 'पानी' को पढ़ते ही हाल ही में घटित चेन्नई की घटना याद आ गई कि वहां किस तरह पूंजीवाद और सरकारों के सहयोग से चेन्नई शहर में तीन हजार तालाबों को पाट कर इस पर गगनचुंबी इमारतें बनाई गईं। अपार्टमेंट बनाए गए। सारी जमीन को पत्थरों से ढक दिया गया और मानव इस पर गर्व करता रहा, इठलाता रहा।

पर हाल की घटना ने उसकी इस झूठी शान को धूल-धूसरित कर दिया। हफ्तों-महीनों तक बारिश ने उसके ही अस्तित्व पर प्रश्न चिह्न लगा दिया। भयंकर बाढ़ आई। उसके घमंड को चकनाचूर कर गई। जहां पहले तालाब ही

तालाब हुआ करते थे, वर्षा के पानी को अपने में समाहित कर लेते थे, जीवन देते थे, वे अब अ भशाप बन रहे थे। 'धूर' भर भी जमीन खाली नहीं थी क इस पानी को पी सके, सोख सके। प्रकृति बदला ले रही थी, अपना रूद्र रूप दिखा रही थी। पर क्या इंसान इस सबक को सखेगा? 'पानी' कहानी के माध्यम से लेखक ने हमारे सामने इस सच्चाई को रखा है।

अभी देश में चारों ओर सूखे का हाहाकार मचा हुआ है। महाराष्ट्र के 'लातूर' में भयंकर सूखा पड़ा है। लोग पानी के लए के लए मारे-मारे फर रहे हैं। पीने के लए भी पानी मयस्सर नहीं है। जनता पलायन कर रही है। पानी की खोज में यहां वहां भटक रही है। जहां लाखों-करोड़ों वर्षों का पानी सं चत है, वह निकाल लेना चाहता है।

“यह तो तय है क कभी न कभी पानी को लेकर भी संघर्ष होगा ही। जिस तरह दुनिया से पानी गायब होना शुरू हो गया है, उसे देखते हुए पानी आने वाले समय में झगड़ों का सबसे बड़ा कारण बनेगा। अब पानी की कल्लत और लड़ाई सर्फ गली कूचों तक ही सी मत नहीं रहने वाली है। नदियों का झगड़ा राज्यों और देशों के बीच पहुंच गया है। यमुना के पानी के लए हरियाणा, पंजाब और दिल्ली का झगड़ा या फर कावेरी के पानी के लए कर्नाटक और त मलनाडु की लड़ाई इसका उदाहरण है। वही ब्रह्मपुत्र के पानी के लए चीन, भारत और बंगलादेश के बीच भी लड़ाई होती है। आजकल महाराष्ट्र के कई जिले इस समस्या से जूझ रहे हैं।”⁶

पानी कहानी में हम देखते हैं क धरती का पानी सूख जाता है। हरे-भरे पेड़ ठूठ हो जाते हैं। इंसान ही नहीं अब जानवरों के लए भी न चारा है न पानी, न च इयों की चहचहाहट है जो जीने की उम्मीद बढ़ा देती है। प्रकृति की सुंदरता को मनुष्य नष्ट करते जा रहा है। आज न म ी की सौंधी सुगंध है, न शुद्ध वायु और पानी। आग लगने पर भी हम उसकी ज्वाला को बूझा नहीं सकते, क्यों क धरती से पानी का स्रोत हम खत्म करते जा रहे हैं। प्राकृतिक सुंदरता अब हमारे लए एक स्वप्न होते जा रहा है। मनुष्य की अंदर की संवेदनशीलता का लोप होते जा रहा है। उसका स्थान वकृति ले रही है। धीरे-धीरे गांव सूखा की ओर बढ़ने लगता है। गांव के बूढ़े-पुरनिए नित्य नए-नए भ वष्यवाणी करते हैं। अनिष्ट घटने की चेतावनी देते हैं। गांव के सारे कारोबार पर कुछ पूंजीपतियों का आ धपत्य हो जाता है। लोग अपने गाढ़े-पसीने की कमाई शवराम पंडति को गरवी रखने लगते हैं, ले कन फर भी भाग्योदय नहीं होता है।

जल-संकट वकराल रूप लेने लगता है। धरती का पानी सूखने लगता है। अब मगन ठाकुर का पं पंग सेट भी पानी कम देने लगा है। गांव में कुंए सूखने लगे हैं। दो-तीन कुओं में पानी शेष रह जाता है। लोगों का जीवन कुओं तक सीमति होकर रह जाता है। अब कुओं ने भी पानी देना बंद कर दिया है। अब कुओं से पानी की जगह कीचड़ निकलने लगा है। लोग अपने और अपने जानवरों के लए पानी की तलाश में भटकने लगते हैं। तरह-तरह के उपाय कए जाते हैं। चारों ओर हाहाकार मचा हुआ है। लोगों का मान सक संतुलन बिगड़ने लगता है। उनके जीवन में अस्थिरता आ जाती है। वे अब भूत-प्रेत, ओझा-गुनी के पाखंड व अंध वश्वास के शकार होने लगते हैं। पानी की एक समस्या हजार समस्याओं का कारण बन जाती है।

गांव में लूट-खसोट बढ़ जाता है। खून-खराबा भी होता है। आशाराम जैसे बहुत सारे लोग मारे जाते हैं। गांव खाली हो जाता है। कुछ लोग रोग-व्या ध से मर जाते हैं। यह सब देख अचानक शवराम पंडत को सदबु द्ध आती है। वह अपना सारा छुपाया अनाज गांव में बांट देता है। लोगों से माफी मांगता है। अब वह लोगों के अस्तित्व में ही अपना

अस्तित्व देखने लगता है। कहता है “जब गांव ही खत्म हो जाएगा तो वे कहां जाएंगे, कससे खरीदेंगे व बेचेंगे और बेचकर करेंगे भी क्या।” कुदरत ने उन्हें आईना दिखा दिया है। वह लोगों को एकजुट हो मल-जुलकर समस्या से लड़ने की बात करता है। मुसीबत कसी अकेले पर नहीं, पूरे गांव पर आया है। यह सभी के भीतर की आवाज थी। मुसीबत में लोग आपस में मलकर एकजुट होकर समस्या से निपटने के लिए एक हरे-भरे बरगद के पेड़ के नीचे पानी होने की उम्मीद लगाकर फर से कुआं खोदने लगते हैं। मरता क्या नहीं करता। पानी बिना लोगों के शरीर का खून सूख रहा था, गला सूख रहा था। तभी अचानक काले घने बादल आकाश में घिर आते हैं। घनघोर बारिश होती है। लोग झूमने लगते हैं, खुशी के मारे नाचने लगते हैं। अपने-अपने बर्तनों में पानी इकट्ठा करते हैं। उन सब लोगों को याद कर रोने लगते हैं जो एक-एक बूंद पानी के लिए तरसते हुए मर गए थे। धरती की मोटी-मोटी दरारें पानी पी रही होती हैं। ले कन कई दिनों तक पानी बरसता रहता है और यह एक नई वपत्ति लोगों के सामने खड़ी कर देती है। पानी रखने के लिए न ताल है, न पोखरें, न पेड़-पौधें। फलस्वरूप पानी सड़ने लगता है। बर्दाश्त न होने वाली बदबू फैलने लगती है। तरह-तरह के कीड़े-मकोड़े पैदा हो जाते हैं, जिनके काटने से तरह-तरह के संक्रामक रोग होने लगता है। लोगों का जीना दुभर हो जाता है। चारों ओर पानी ही पानी का हाहाकार मचा हुआ है। नमी के कारण घरे-घरने लगती हैं। मगन की छत पर बैठ कुछ बहत्तर लोगों का कहना है - “हम भूखे-प्यास हैं कई दिन से। प्यास बहुत बढ़ जाती है तो वही बारिश का सड़ा हुआ एक चुल्लू पानी डाल लेते हैं भीतर। कुछ भी हो अब हमें इसकी परवाह नहीं है पर अब हमें कुछ नहीं होगा। हम जानते हैं हमारे भीतर जीवन पनप रहा है फर से। उन ठूठ पेड़ों के साथ जिनमें नयी कोपलें इतनी दूर से भी दिखाई देने लगी हैं, जो हमारी आंखों का सूखा खत्म करेगी। हम जानते हैं क जब पानी सूखेगा तो एक नयी धरती हमारा इंतजार कर रही होगी। घास और नमी और जीवन से भरी इस पर हम बहत्तर लोगों में कोई बहस नहीं है क हम इस हरियाली को कायम रखेंगे।”⁷

लेखक ने दिखाया है क जिस पानी की तलाश में वे कोसों दूर तक जाते थे, धरती का सीना चीरते थे, आपस में लड़ते थे अब वहीं पानी अ भशाप बन गया है।

निष्कर्षतः कहा जा सकता है क मनुष्य को अपने स्वार्थों से परे उठकर प्रकृति के साथ सामंजस्य एवं संतुलन बनाकर रहना होगा। प्रकृति कभी सूखा लाती है, कभी बाढ़। यह सारा क्या धरा मानव का ही होता है। अगर सामंजस्य की स्थिति बनाकर न चले तो वह जीवन लीला ही समाप्त कर देगी। उसका हथौड़ा असहनीय है। फर भी मानव हठधर्मता दिखाता है। प्रकृति को अपने वश में करने चला है। उसके सारे संसाधनों को नष्ट करने पर उतारू है। कंक्रीट के जंगल, अंधाधुंध पर्यावरण दोहन, मशीनीकरण और नए-नए कल-कारखाने लगा कर वातावरण दूषित कर रहा है। अपने ही पैरों पर कुल्हाड़ी मार रहा है। वह सोच भी नहीं पाता क जब प्रकृति समतावादी रूख अपनाती है तब मानव प्रकृति का खलौना मात्र बनकर रह जाता है। वह प्रकृति की उत्पत्ति है, प्रकृति उसकी नहीं।

अतः मनुष्य को प्रकृति के नियमानुसार चलना होगा, उससे सामंजस्य एवं संतुलन बनाकर रहना होगा तभी प्रकृति हमारी रक्षा का वधान निभाएगी, हमें सुख समृद्धि देगी। जीवनदायिनी धरती को बचाने के लिए जंगल, वृक्ष व पानी की उपस्थिति बहुत जरूरी है। यह सर्व वदित है क पृथ्वी में जीवन का प्रारंभ जल से हुआ है। सभी प्रकार का जीवन जल पर ही आश्रित है। जल को मानवता के लिए सृष्टि का अनुपम उपहार कहा गया है।

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**AN ACADEMIC LITERATURE REVIEW ON CUSTOMER RELATIONSHIP
MANAGEMENT PRACTICES AND KNOWLEDGE MANAGEMENT IMPACTING
CUSTOMER'S PURCHASE INTENTIONS**

ABSTRACT

CRM enables the development of long-term relationships with both current and potential consumers while assisting businesses in improving corporate performance. By utilizing customer information and feedback, businesses adopting this marketing strategy strengthen their bonds with customers and broaden their brand recognition. The traditional transactional marketing approach, which is useful for increasing the amount of individual transactions, differs significantly from consumer relationship management. This paper examines the literature on customer relationship management studies, knowledge management, as well as the impact of these factors on customers' purchase intention. This review article will aid in the identification and development of new CRM research trends, as well as different subjects and analytical tools utilized in research investigations. This research shows how CRM research has evolved in recent years in terms of locations, study types, research paper sources, data types used for analysis, and popular research areas. This study presents recent CRM studies in a systematic manner, including their impact on consumer purchase intentions and their function in fostering a healthy connection with customers. Researchers and academics will benefit from this study in future CRM research.

Keywords: - Customer Relationship Management, CRM Practices, CRM Research, Knowledge management, Literature Review, Purchase intentions

INTRODUCTION

What is CRM

The term "customer relationship management" (CRM) relates to the procedure of managing relations with clients. It is a set of strategies, methods, techniques, and technologies that firms employ to grow, retain, and acquire customers. This tool assists businesses with marketing, sales, and service management. Increased connections between enterprises and customers result in increased revenue. By focusing on a company's interactions with suppliers, customers, and employees, among other relationships, a professional CRM helps organizations gain new prospects, earn their confidence, and deliver efficient services and support through the developed ties.

As a result, customer relationship management has become a tool that anybody can utilize in the business. CRM is the best way for businesses to manage internal and external relationships, particularly in sales, business development, recruitment and retention, and marketing, by setting the tone for improved sales management, business development, recruitment and retention, and marketing. Many businesses, whether they are online shopping platforms or branded stores, need to improve their CRM techniques in order to raise client interest in their products. This research will also assist marketers in developing efficient CRM solutions. CRM relies heavily on social media and other information technology platforms. Customer satisfaction, loyalty programmes, and up-to-date information are all provided via CRM. In today's scenario most of businesses use online customer relationship management software to sustain and develop customer relationships. CRM systems help in targeting the correct customers by analyzing prior data to

determine which consumers will be more profitable. CRM is growing more common in nearly every industry with each passing day. CRM software and information technology are the most widely used.

A customer relations management (CRM) strategy is a plan for a company to enhance sales while also improving customer service. Its purpose is to turn leads into consumers and keep existing customers by providing compelling material that is tailored to their specific interests. CRM strategies achieve this purpose by combining processes, behaviors, and technology. A transactional sales paradigm has given way to a more customer-centric approach in the current day.

A person's readiness to perform a given behavior or make the decision to acquire a product or service is referred to as "purchase intention." "Purchase intention" refers to a buyer's willingness to buy a specific goods or service. A number of independent variables like internal and external variables influence the dependent variable, purchasing intention. Purchase intentions indicate a customer's willingness to buy something or use a service. Corporate CRM with the help of social media enhances CRM quality and knowledge management, resulting in increased customer purchase intention. Today's competitive environment gives every business the opportunity to sustain in the market and increase their sales growth. Many organizations, whether they are online shopping websites or branded stores, need to enhance their CRM strategies to increase the customer's intentions about their product. This study will also help marketers innovate with effective CRM systems.

Knowledge Management

Knowledge management is the process of obtaining, organizing, sharing, and accessing information. As Business to Business and Business to Commerce interactions become more sophisticated, the distinctions between KM and CRM will become increasingly uncertain. The case for knowledge management in CRM, on the other hand, will grow increasingly compelling and inevitable. A theoretical model has been developed that illustrates the strong link between CRM dimensions (knowledge management, customer orientation), marketing capabilities, and hotel success. They contributed significantly to the corpus of knowledge by developing a thorough framework for describing the four elements of CRM's impact on hotel performance. BPO organizations with high KMC differed significantly from those with low and medium KMC, according to trends in low, medium, and high KMC dimensions (Abdul Alem Mohammed and Basri bin Rashid (2012).The researcher continued by stating that establishing knowledge application competency should be a top priority when it comes to managing business process outsourcing (Deng and Liu (2015).

OBJECTIVES OF THE STUDY

1. This research study is related to the most recent CRM research studies.
2. The goal of this literature review is to learn about CRM practices, knowledge management, and their impact on customer purchase intentions, as well as to organize and provide prior CRM studies in an organized and summarized format for academics and practitioners.

DESIGN/METHODOLOGY

For this study, the researcher reviewed 50 papers from reputed journals like Scopus, Elsevier, Emerald and other journals, out of which 30 papers were selected which were relevant for the study and comprised of variables like CRM, CRM practices, impact of CRM, purchase intentions, and knowledge management. In this study, some aspects of CRM practices are also studied, like implementation of CRM, business performance, E-CRM, social media etc. The source of the research paper was Google Scholar and Research Gate. This paper is based on a

literature review and a study of the most relevant papers as identified by reading abstracts. The literature review papers for this topic were published between 2010 and 2021.

NEED OF THE STUDY

In today's changing environment, an impactful CRM performance to increase the purchase intentions of customers is critical, but it has not been effectively addressed in prior studies. This research includes a review of literature regarding CRM practices, knowledge management on Prior studies like data collection methods, sampling technique, nations, industry, statistical tests and procedures, and software, as well as a brief explanation of keywords and variables utilized in recent research

Review of Literature

1. This study examined the moderating role influence of dynamic capabilities in increasing business efficiency by comparing service sector organizations in Indonesia and Thailand. According to the study, CRM activities have a positive impact on the marketing capabilities and organizational performance. Marketing expertise was also determined to be crucial in bridging the gap between CRM efforts and business results.. (Indah Fatmawati, Nuryakin, Kumpanat Siriyota(2021)
2. The objective of this study was to examine the customer relations system, practices, and procedures of a few corporate entities in south India. The investigation was conducted on a qualitative basis. The findings revealed that new digital technologies and resources have had an impact on the business world's CRM art.Sanjay B.C(2021)
3. They explain how S-CRM is a 2nd positive element comprised of a collection from first integrative dynamic capabilities that, when properly integrated, produce performance outcomes. In specifically, the impact of S-CRM front- and back-office technology innovation, customer interaction activities, and social information processes on customer relationship performance is modelled. In the front and back offices, S-CRM varies from previous CRM in a number of ways; according to the findings, this study developed a framework for researchers and managers in information management and marketing. The presented hypotheses were tested using partial least squares structural equation modelling (Paul Harrigan, Morgan P. Miles) (2020)
4. Through a survey of literature, the study's goal was to look into the concept of e-CRM.Andit's many methodologies for establishing practices and apps for building customer relationships. The study has significant ramifications since it identifies the strategic significance of e-customer relationship management (e-CRM) in providing individualized and tailored customer care.. (Nidhi Kampani, Deepika Jhamb (2020)
5. The results showed that digital marketing and CRM had a positive significant impact on online purchase intention of customers.The purpose of this research was to investigate the effects of digital marketing on e-commerce consumers' online purchase intent in Malaysia. (Omkar Dastane (2020)
6. This article proposed an E-CRM conceptual model for implementing a CRM strategy that was focused on all stages such as (operational, analytical, and collaborative). The study's purpose was to create an E-CRM conceptual model. According to the findings, every company should handle the wants and needs of electronic customers, as well as improve customer orientation, customer intelligence, and knowledge capture techniques.Mufleh Amin AL Jarrah, Ghassan Issa Alomari(2020)
7. The influence of social media on the performance of CRM was investigated in the study. They investigated the performance of CRM in social media for a group of Iranian banks

- for this aim. Questionnaires were employed by researchers, and SPSS and PLS programming were used for data analysis. The findings revealed that there are significant links between customer satisfaction and organisational success, as well as CRM in social media. Manijeh Haghghinasab & Vahideh Momayezi (2020)
8. The goal of the study was to see how effective customer relationship management components like call centres, service centres, and data mining are at attracting and retaining customers. A questionnaire was utilised to collect data, and a sample of 317 Y-Telecoms subscribers was chosen. To provide better services to clients, call centre employees should improve their communication skills and improve the data mining process. (Wail Alhakimi and Abdulsalam Ghaleb (2019)
 9. This paper found that small businesses can survive growing competition by incorporating customer relationship management (CRM) into their business model. According to the findings, there is a significant amount of evidence that social CRM is an effective strategy for SBEs functioning in online markets. Smaller communities may be able to improve the life cycle of SBEs, resulting in more community entrepreneurial and startup success. (Nikki R. Hicks (2018)
 10. It would be helpful for prospective entrepreneurs and politicians to do research on the specific aspects of online shopping and consumer behavior of online shoppers in order to develop market-specific tactics. Bangladeshi customers' online shopping behaviours were explored in this study. (Mohammad Anisur Rahman , Md. Aminul Islam 2018)
 11. Customer relationship management, client satisfaction, brand loyalty, increased profitability, and retaining customers are the five factors investigated in this study. For the analysis, the Study of Moment Structures (AMOS, Version 22) was employed. The study's findings demonstrated that customer relationship management has a large impact on customer satisfaction, as well as a considerable impact on customer loyalty and profitability. (Bader Almohaimmed (2018)
 12. They created a complete research and survey are based on cutting-edge CRM techniques.. This study's purpose was to look at five different areas where CRM may help, including data mining, E-CRM, KM (knowledge management), social CRM, and data quality. All categories have a positive impact on CRM, which can increase a company's overall performance, but organizations need improve customer information quality, infrastructure capabilities, to facilitate the CRM system's adoption, as well as a customer oriented strategy. (Zeynab Soltani & Batool Zareie et al (2018)
 13. This study reviewed the four behavioral components of CRM, revealing and identifying 'customer prospect' and 'personalized customer' as additional activities and dimensions which need to be integrated to construct a solid CRM framework as revised model. The revised model was analyzed using structural equation modelling.. Maraj Rahman Sofi Iqbal Ahmad Hakim (2018)
 14. It has been noticed that private sector and public sector banks have considerable differences. In every research, the efficiency of private sector banks was found to be superior.. Rupali Madan, Rachna Agrawal (2018)
 15. This study discovered that social media marketing and client interactions have a beneficial impact on consumers' purchase decision. Furthermore, the study research model demonstrated full mediation of relationships with customers in the relationship between social media marketing and purchase intention among customers. This article highly advised luxury fashion firms to engage in social media marketing activities in order to deliver value to their clients. (Vikas Gautam & Vikram Sharma 2017)

16. The characteristics that affect CRM effectiveness in social media were investigated in this study. They investigated the performance of CRM in social media for a group of Iranian banks for this aim. Questionnaire survey was employed by researchers, and SPSS and PLS programming were used for data analysis. The findings revealed that there are significant links between customer satisfaction and organizational success, as well as CRM in media platforms. (Manijeh Haghghinasab & Vahideh Momayezi(2016)
17. The relationship between CRM practises and customer brand engagement was investigated in this report, which focused on Sri Lankan hotel companies. A total of 183 managers were used in the investigation. The researcher employed a structured questionnaire and SEM techniques for analysis. K.G.N. Kumarapelia & G. D. Samarasinghe (2016)
18. The goal of this study was to examine the trends in low, middle, and strong knowledge management capacities between business process outsourcing (BPO) firms. The finding showed that medium and high KM competence organizations have four dimensions of KM capability. Each aspect of KM capabilities has a favorable impact on BPO performance. The aspects of KM capabilities are affected differently by firm size, age, industry, and outsourcing age. (Shan Liu, Zhaohua Deng (2015)
19. KMC affects CRM and quality of service favorably, and CRM affects service quality positively as well, according to the data. This result also included suggestions for how organizations can enhance their KMC, CRM, and service quality. (Shu-Mei Tseng (2015)
20. The study found that knowledge management is critical to CRM's success. The purpose of this research is to look at KM and CRM integration from three angles: benefits of KM integration, customer knowledge categories in CRM, and models demonstrating KM and CRM link. The findings of this study suggest that by combining KM and CRM, businesses may reach their goals sooner, with higher quality, and at a lower cost than their competitors. (Arash Khosravi (2015)
21. The CRM agenda in company interfaces was investigated, as well as its success in terms of customer happiness and loyalty. According to the findings, CRM has a significant relationship with customer happiness and loyalty. CRM has a direct and positive association with customer happiness and loyalty, according to the study. (Kamrul Islam Shaon & S. M., Rahman (2015)
22. The purpose of this article was to determine the innovation selection process in order to investigate CRM technologies used by small and medium-sized businesses. CRM's perception and integration were also assessed. The data was analysed using multivariate and logistic regression. The findings reveal that age, education, gender, and market position have little effect on a company's CRM system. Thuy Uyen H. Nguyen, Tresa S. Waring (2014)
23. This article focused on how CRM must evolve in order to stay up with the increasing of social media. For businesses, combining social media with customer relationship management poses both risks and opportunities. Edward C. Malthouse & Michael Haenlein(2013)
24. This research found and investigated the link between CRM and business performance, which has been overlooked from a CRM standpoint. The research developed a novel testing path for scholars and examined the function of enablers in CRM implementation and business effectiveness. In this study, Meta-analysis was employed for analysis. The studies revealed that the CRM cycle is centred on dual value creation, business performance, and enablers. (Saeed Gholami, Muhammad Sabbir Rahman (2012)

25. This study discovered the use of e - marketing activities and new database technologies used for customer interactions; an E-CRM implementation plan can generate higher innovation, efficiency, productivity, and profitability. This study discovered the value conceptual model.(Abdul Alem Mohammed & Basri bin Rashid (2012).
26. The goal of this study is to develop a comprehensive overview of important topics for academics and practitioners working with customer relationship management (CRM), such as CRM advancements, shifting consumer roles, conceptualization issues, and consumer exploitation. The authors of this research proposed eight suggestions for improving CRM.(Bang Nguyen, Dilip S. Mutum(2012)
27. The goal of the study was to learn about customer satisfaction and CRM deployment in Taiwanese commercial banks, as well as to identify the important moderators between customer satisfaction and CRM implementation. For analysis and measurement, the researcher employed a regression model and hypotheses. Customer happiness and CRM implementation have a significant association, according to the findings. Chris Adalikwu 2012.
28. This study looked on the role of social networks in customer relationship management. CRM models underpin this notion and analysis tools. This research created a theoretical foundation for incorporating social networks into CRM models. (Mohammad Javad Mosadegh & Mehdi Behboudi (2011)
29. This review investigated at the links between knowledge management and Customer relationship management success, as well as technological, customer-oriented, and organizational aspects. For CRM success, the findings revealed that the company should incorporate KM activities, purchase cutting-edge technology, and strive to create a customer-centric mindset.(Aurora Garrido-Moreno ,Antonio Padilla-Melénde (2011)
30. The purpose of this research was to look into approaches to improve business performance through increasing CRM success and effectiveness. The findings revealed that CRM is critical for a firm's efficiency in responding to consumer requests in a highly competitive market environment, regardless of industry.(Benjamin Appiah Kubi and Andrews Kingsley Doku (2010)

A review of literature was being done to understand the impact of CRM practices, Knowledge management on purchase intentions. For review of literature research articles based on CRM practices, knowledge management, purchase intentions were studied of different industries. CRM in different industries varies depending on the research model used.

Table 1 represents the components of some study models used to support CRM practices:

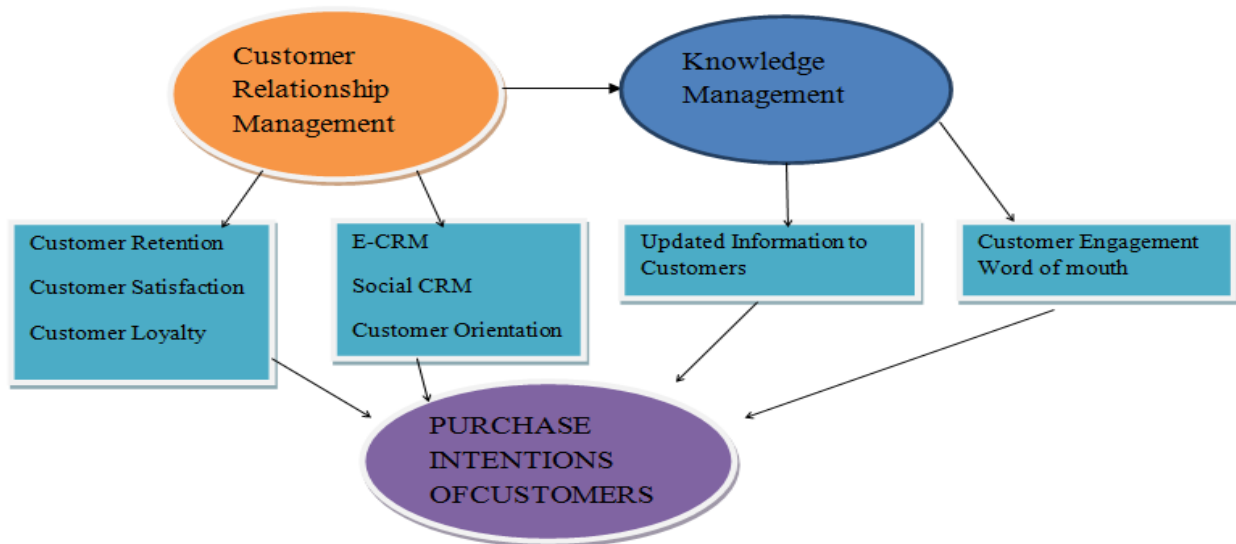
Research Models used by authors for CRM, Knowledge management and their impact on Purchase intentions

S no	Authors	Research Models	Dimensions
1.	Indah Fatmawati, Kumpanat Siriyota (2021)	The sampling approach used and marketing skill was crucial in influencing the association between CRM activities and business performance.	CRM, marketing skills, company performance, Thailand, Indonesia
2.	Sanjay B.C(2021)	Investigation was conducted on a qualitative basis.	Customer relations system, practices, and procedures, south India
3.	Paul Harrigan, Morgan P. Miles) (2020)	The proposed hypotheses were tested using structural equation modelling (PLS-SEM).	Customer engagement and social information processes, customer relationship
4.	Nidhi Kampani, Deepika Jhamb (2020)	They looked into the link between CRM practices and customer involvement with brands. as well as describing it using a research model.	CRM, Technology, Customer Service, and Customized Services and e-commerce.
5.	Omkar Dastane (2020)	Structural equation modelling used by following IBM SPSS AMOS 24, snowball sampling technique and self-administered questionnaire were used for empirical study.	Purchase intention of customer, CRM,E-commerce, Online shopping, Social media marketing. Digital marketing
6.	Mufleh Amin AL Jarrah, Ghassan Issa Alomari(2020)	Created an E-CRM conceptual model.	E-CRM Strategy, Level AND Process, Customer Oriented Strategy, Customer Intelligent and Knowledge Capture Strategy
7.	Wail Alhakimi and Abdulsalam Ghaleb (2019)	Descriptive analytical method and Questionnaire used for analysis	CRM components, call centre services,data mining, customer satisfaction and retention, Y-Telecom, Yemen
8.	Bader M. A. Almohaimmeed (2019)	Structural equation modeling and questionnaire methods were developed for analysis	Social media and purchase intentions, social media marketing, brand loyalty
9.	Nikki R. Hicks (2018)	Qualitative method used for this study	CRM and E-Retailing Environment
10.	Mohammad Anisur Rahman , Md. Aminul Islam 2018)	Self-constructed questionnaire was used	Consumerbehavior, online shopping, e-commerce, Dhaka Bangladesh
11.	Zeynab Soltani & Batool Zareie et al (2018)	Partially least squares structural equation modelling was used to test the hypotheses.	CRM, Information technology Customer orientation, Organizational capability,
12.	Maraj Rahman Sofi Iqbal Ahmad Hakim (2018)	(SEM) Modelling was used.	CRM, dimensions of CRM like customer prospecting' and 'personalization'
13.	Rupali Madan, Rachna Agrawal(2018)	The banks were compared using an independent t-test.	Relationship marketing, public and private banks. Customer relationship management
14.	Vikas Gautam & Vikram Sharma 2017)	To evaluate the study mode, structural equation modelling was used.	Analysis of Factor, luxury fashion houses, social marketing, purchasing intents, and trustworthiness are all words come to mind when thinking about factor analysis.
15.	Manijeh Haghghinasab &Vahideh Momayezi(2016))	Questionnaire and SPSS& PLS programming were used.	Customer Relationship Management, social media,banks,performance,customers
16.	Shan Liu, Zhaohua_Deng (2015)	Cluster analysis, MANOVA and ANOVA were used to evaluate and examine the km capability and other dimensions.	Business process outsourcing(BPO), low, medium, and high knowledge and management (KM)dimensions
17.	Shu-Mei Tseng et al (2015)	Purposive sampling, structured questionnaire survey, partial least square (PLS) techniques were used.	capability of Knowledge management,CRM, and quality of service

18.	Arash Khosravi (2015)	Systematic literature review of empirical studies	Customer Relationship Management, Customer Knowledge Management
19.	Kamrul Islam Shaon & S. M., Rahman (2015)	Literature Review paper	CRM, Customer Satisfaction, Customer Loyalty
20.	ThuyUyen H.Nguyen,Trresa S. Waring (2014)	Used multivariate and logistic regression for analysis.	CRM technologies, small and medium-sized businesses, CRM's perception
21.	Edward C. Malthouse & Michael Haenlein (2013)	CRM presents both hazards and opportunities, according to research into social media integration.	Customer Relationship management ,IT, Customer insight ,Social media, Key performance indicator
22.	Saeed Gholami, Muhammad Sabbir Rahman (2012)	This study emphasized on dual value creation of CRM and used Meta analysis.	CRM, Enablers, Micro and macro perspectives, Frameworkand performance of business
23.	Abdul Alem Mohammed & Basri bin Rashid (2012)	Value conceptual model has created by them.	CRM Dimensions, Hotel performance
24.	Dilip S. Mutum, Bang Nguyen (2012)	Review of Literature	Customer relationship management, pitfalls, consumer behavior
25.	Chris Adalikwu 2012	Regression model was used for analysis	Customer relationship management ,customer satisfaction, organizational characteristics and commercial banks
26.	Mehdi Behboudi, Mohammad Javad Mosadegh (2011)	This research developed a Social CRM framework based on traditional CRM approaches.	Customer Relationship Management, Social CRM, Social network and analysis.
27.	Andrews Kingsley Doku, Benjamin Appiah Kubi (2010)	They discovered a structure known as the CRM pyramid which will improve the success and efficacy of CRM.	CRM strategy, customer retention, resources and CRMpyramid
28.	Rana Saifullah Hassana, Aneeb Nawaz (2015)	Regression, equation and hypothesis are used ,questionnaire is used for data collection.	Shell Pakistan, CRM, customer satisfaction
29.	Dr.K.Arunmuhil,Dr.A.Arumu gam(2013)	Chi Square method is used for analysis.	Loyalty Programmes,Loyalty Cards, Customer Loyalty
30.	Iqbal Ahmad Hakim, Maraj Rahman Sofi (2018)	SEM Modelling was used to validate the model of CRM.	CRM, customer prospecting and focus, personalization, banks

Model of CRM, Knowledge management and their impact on Purchase intentions

This model is created after reviewing all research paper which is given in literature review related to CRM, Knowledge Management and their impact on Purchase intentions of customers. This paper determined that CRM strategies, knowledge management and other factors highly influence the customer behavior and increase their purchase intentions.



CRM PRACTICES IN THE 21ST CENTURY

CRM refers to a set of tactics, procedures, and tools for attracting and retaining customers. CRM is useful in a variety of company areas, including sales, marketing, and operations. CRM practices and tools help organizations improve their customer interactions, build strong relationships and purchase intentions of customers with them. Improved customer interactions and connections between organizations and customers result in increased revenues and growth good CRM practices aid businesses in acquiring new customers and providing effective services and support. Database marketing has previously been utilized by businesses to retain clients by offering unique and trendy offers and incentives in exchange for their services. Modern customer relationship management (CRM) systems contain a number of features. CRM will be the most effective instrument for managing both internal and external relationships in a changing environment in 2021. This research will aid in the exploration of various strategies and techniques for building excellent CRM to retain clients.

In a dynamic market environment, expanding market rivals, technological assistance, and open market processes all contribute to the generation of customers (Samsudin and Juhary, 2011). Customer relationship management has aided businesses in increasing customer happiness, brand loyalty, market share, and profitability. Data mining benefited modern businesses since it provided valuable information about clients that could be used to improve customer relationship management. CRM enables salespeople to increase sales more quickly. In 2021, a new CRM system will be required; one that is consistent with current market trends and enhances production and sales. CRM, as a business strategy, can assist a company save time in 2021 for client retention.

As a result, in 2021, segmentation will benefit organizations by allowing sales teams to better understand who is interested, hesitant, or entirely indifferent. The sales team takes less time with this knowledge, which enhances the organization's bottom line. CRM enables sales teams to sell more and quicker by recording client's expectations and experiences. In order to keep current top of new market trends and encourage needs-based production and marketing, businesses will require modern CRM system on a continuous basis in 2021. CRM is the best strategy to improve customer satisfaction and retention in an era where greater virtual engagement is the norm as

more people shop online. CRM also simplifies repetitive procedures and gives management tools to make repeat actions simple and customer-focused. As a result, there is a higher level of contentment. In order to grow their business and outperform their competitors in 2021, all entrepreneurs will employ CRM strategies. Organizations must also seize new opportunities presented by today's environment and invest in the technologies required to explore them in the new era.

CONCLUSION

Through a literature review, this study provides a more comprehensive understanding of CRM research. It will help academics, researchers, and practitioners for more research and determining the CRM trend.

Recent research publications and sample papers were included in this study for review. The research articles were gathered from national and international journals and publications, as well as Google Scholar and other web sources. CRM frameworks and models were offered in the majority of primary and secondary research. The most commonly used data collection method was the questionnaire. The most commonly utilized sample techniques were convenience sampling and simple random sampling. As sample countries for CRM study, research papers from India, Thailand, Pakistan, China and Iran were discovered. The banking, insurance, hotel, and tourism industries were mentioned the most frequently in research articles. Many keywords appear in CRM research studies, such as customer engagement, relationship marketing, and relationship management. Knowledge management. Many research included the phrases information technology, customer retention, and customer satisfaction-CRM. New CRM areas include information technology and information systems, data mining, and other CRM software. CRM examines the nature of each client relationship, whereas KM offers the data that defines how a company operates. Many studies have been conducted in the past and have led to the newly discovered path, but there is still a need to develop effective CRM practices, knowledge management, and other systems that are adaptable to changing environments. As a result, we understand that CRM or KM alone cannot be capable of satisfying demands of a client-oriented industry; instead, organizations will be able to shape all areas of the company for the success of each customer relationship by combining both fields of study and other CRM parameters in a balanced way.

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ENVIRONMENT SUSTAINABILITY THROUGH FINANCIAL LITERACY ABOUT DIGITAL PAYMENT (STUDY OF ACADEMICIANS)

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ABSTRACT

The digital financial services like mobile money, digital payments, and newer digital payment systems or financial technologies when rendered productively and responsively in a structured environment, will enable growth and faster achievement of Sustainable Development Goals (SDGs) for a country. In recent years, the digital payment transactions in India have seen exponential growth in India due to massive drive by the Government of India's "Digital India" programme. Further, in India, using digital payment systems has become cost effective. Simultaneously, however, the growth of currency demand has also increased tremendously in the country. There is thus a need to understand whether the digital payments are sustainable in India. Surprisingly, financial inclusion is not found to have any role in sustainability of digital payments. Insights from the results signify impact on development in the direction of growing need for financial exposure by way of financial literacy and rising economic growth using positive shocks to advance digital payments in India. This study will focus on that what are the benefits of digital payment in form of economic sustainability and also to know the perception of academicians about digital payment.

Digital literacy The competence and knowledge of how to access and use digital products and services such as tablets mobile phones web browsers, SMS the internet etc

Financial literacy The competence and knowledge to carry out financial services that support beneficial practices such as saving warnings and repairing etc .

Digital financial literacy Digital financial literacy combines the skill needed to to carry financial services with the skill to use digital technology digital financial literacy helps user to use such as internet browsers and mobile devices in assessing the financial tools with the help of digital financial literacy it become easy to buy and sell any financial product those have less skill in technology may struggle to access even online bank account

Digital payment, also known as electronic payment, is a method of conducting financial transactions using digital technologies and online platforms. It has revolutionized the way we make payments, offering convenience, speed, and security.

In a digital payment system, traditional forms of payment such as cash, checks, or money orders are replaced by electronic methods. This shift has been made possible by advancements in technology, including the widespread use of smartphones, internet connectivity, and the digitization of financial services.

One of the most popular forms of digital payment is mobile wallets. These are applications that allow users to store their payment card information digitally and make purchases using their smartphones. Mobile wallet providers such as Apple Pay, Google Pay, and Samsung Pay have

gained widespread adoption, allowing users to make payments in stores, online, and even through certain apps.

Online banking is another common form of digital payment. Customers can access their bank accounts through secure online platforms and perform various transactions, including bill payments, fund transfers, and online purchases. Online banking has made it convenient for individuals to manage their finances and make payments without the need for physical interaction with a bank.

Debit and credit cards have long been a popular form of payment, and the digital age has made them even more convenient. Transactions are processed through card networks such as Visa, Master-card, or American Express, ensuring the security and authentication of the payment.

Peer-to-peer (P2P) payment platforms have also emerged as a popular digital payment method. These platforms enable individuals to transfer funds directly to one another, eliminating the need for traditional intermediaries.

Digital payment offers several advantages over traditional payment methods. It is faster, as transactions can be processed instantaneously or within seconds. It is also convenient, allowing users to make payments from anywhere and at any time, as long as they have an internet connection. Digital payment methods also enhance security, with features such as encryption, tokenization, and two-factor authentication protecting sensitive financial information.

HOW DIGITAL PAYMENT INTEGRATED WITH ECONOMIC ENVIRONMENT STABILITY

Firstly, digital payment promotes financial inclusion by providing access to financial services for previously underserved populations. Traditional banking systems often have barriers to entry, such as physical branch requirements or minimum balance constraints. However, digital payment methods eliminate these barriers, allowing individuals, especially those in remote areas, to participate in the formal economy. As a result, more people can save, transact, and access credit, leading to a more inclusive economic environment. Furthermore, digital payment systems enhance the efficiency and transparency of financial transactions. By replacing cash and manual processes with electronic methods, digital payments streamline business operations, reducing administrative costs and time. This efficiency translates into increased productivity, lower transaction costs, and accelerated economic activities. Additionally, digital transactions leave a digital trail, which helps combat corruption, money laundering, and tax evasion. The increased transparency and traceability contribute to a more stable and accountable economic environment.

Digital payment integration also supports economic growth by fostering entrepreneurship and innovation. By providing a seamless and secure platform for online transactions, digital payment systems enable small businesses and startups to expand their customer base beyond physical locations. This expanded market access facilitates business growth and stimulates economic activity. Moreover, the availability of digital payment infrastructure encourages the development of new financial products and services, such as online lending platforms and digital wallets, which further contribute to economic stability and growth. Another important aspect is the resilience of digital payment systems during crises. In times of natural disasters, pandemics, or other disruptions, digital payment methods offer a viable alternative to physical cash, allowing businesses and individuals to continue conducting transactions remotely. This resilience helps mitigate the adverse effects of such crises on economic activities, ensuring a more stable

Digital payment systems also play a crucial role in promoting financial inclusion. By offering access to formal financial services, even to previously underserved populations, digital payment integration helps individuals and businesses participate more fully in the economy. This inclusion reduces reliance on informal and cash-based transactions, increasing financial transparency and stability. Additionally, digital payment methods enable individuals to build credit histories, access loans, and save money more securely. By promoting financial inclusion, digital payment integration contributes to a more equitable and stable economic environment.

Digital payment systems generate vast amounts of data, which can be analyzed to gain insights into consumer behavior, spending patterns, and market trends. Businesses can use this information to make informed decisions, optimize their operations, and develop targeted marketing strategies. The availability of accurate and timely data contributes to a more stable economic environment by enabling businesses to adapt to changing market dynamics and consumer preferences.

Digital payment methods have facilitated cross-border transactions and boosted global trade. E-commerce platforms and international payment gateways enable businesses to engage in transactions with customers and suppliers worldwide, removing geographical barriers. This integration with the global economic environment opens up new market opportunities, drives economic growth, and enhances international economic cooperation.

In conclusion, the integration of digital payment with the economic environment has far-reaching benefits for stability. Lower transaction costs, enhanced financial security, facilitation of online business growth, and financial inclusion all contribute to a more efficient, transparent, and resilient economic system. As technology continues to advance, digital payment methods will likely play an increasingly significant role in shaping the stability and growth of economies around the world.

HOW DIGITAL PAYMENT IS LINKED WITH ECONOMY

Digital payment systems have become increasingly intertwined with the economy, revolutionizing the way transactions are conducted and impacting various aspects of economic activity. In today's interconnected world, digital payment methods such as credit cards, online banking, mobile wallets, and electronic fund transfers have gained significant prominence. These systems enable individuals, businesses, and governments to facilitate financial transactions efficiently, securely, and conveniently.

One of the key ways digital payment is linked to the economy is through its role in promoting financial inclusion. Traditional banking services may be inaccessible to many individuals, particularly those in remote areas or with limited financial resources. Digital payment systems bridge this gap by providing affordable and accessible alternatives. With a smartphone and an internet connection, individuals can open digital wallets, make online purchases, and engage in electronic transfers. This increased access to financial services contributes to the growth of the economy by empowering individuals to participate in various economic activities, such as e-commerce, investment, and entrepreneurship.

Moreover, digital payment systems have the potential to enhance overall economic efficiency. Compared to cash-based transactions, digital payments offer benefits such as speed, convenience, and accuracy. Digital transactions eliminate the need for physical transportation of cash, reducing costs and increasing the speed of transactions. This efficiency translates into improved productivity, as businesses can process payments quickly and allocate resources more effectively. Additionally, digital payment systems generate vast amounts of data, which can be analyzed to gain insights into consumer behavior, spending patterns, and market trends. This information can help businesses make informed decisions, optimize their operations, and develop targeted marketing strategies, thereby driving economic growth.

Digital payment systems also contribute to the formalization of the economy. By facilitating electronic transactions, these systems leave a digital footprint, ensuring transparency and accountability. This reduces the prevalence of informal or unrecorded transactions, which can hinder economic development by evading taxes, distorting economic statistics, and limiting access to credit. As more transactions shift to digital platforms, governments can better track economic activity, enforce regulations, and collect taxes, leading to increased revenue generation and a stronger formal economy.

Furthermore, digital payment systems foster innovation and entrepreneurship. With the rise of digital platforms and payment gateways, individuals and businesses have greater opportunities to develop and market their products and services. Startups and small businesses can leverage digital payment systems to reach a wider customer base, expand their operations, and compete on a global scale. This entrepreneurial activity spurs economic growth, job creation, and technological advancements, driving overall prosperity.

In conclusion, digital payment systems are intricately linked with the economy, playing a vital role in promoting financial inclusion, enhancing efficiency, formalizing the economy, and fostering innovation. As these systems continue to evolve and gain widespread adoption, they will undoubtedly shape the future of economic transactions, empowering individuals and businesses and contributing to sustainable economic development.

REVIEW OF LITERATURE

(R. Joshi & Kumar, 2020) looked into the effects of digital India on the Indian economy to see what issues come with it. According to the report, digitization has enhanced creativity, made operations simpler, boosted the economy, and opened up new employment opportunities. It has helped build structural transparency and allowed money to move freely across the economy.

M. C. Joshi (2017) investigated the effects of demonetization on digital payments as well as the variances in growth across various digital payment channels before, during, and after demonetization. They used a descriptive research methodology to achieve the aforementioned goals, and they got the NPCI retail digital payment data they needed from the Reserve Bank of India's website. Through their investigation, they discovered that the actual consequences of demonetization on digital payments were also observed following the transition.

Agarwal et al. (2018) examine how the scarcity of money affects consumers' spending habits and technique of decision-making. In order to assess the breadth and tenacity of post-announcement use of digital payment systems, they also apply a difference-in-difference technique. They cited

the debit card statistics, which showed that usage soared following demonetization among both current users, whose transaction volume climbed by over 28%, and new adopters, whose transaction volume increased by approximately 400%. They also looked at the effects of demonetization on the supply and demand of conventional and alternative payment methods like debit cards and eWallets by collecting data from two merchants (one an online grocery store and the other an offline retailer).

Ghosh, 2021. examined several publications and concluded that using digital payment is much more time- and space-efficient than using traditional methods of paper money. Additionally, he stressed that anyone with an internet connection can do these payment transactions whenever they choose, without having to wait in line. The study contends that since digital payment methods are quicker and come with bonuses or cash back, more customers are utilizing and embracing them. The researcher also discussed the post-demonetization digital payment system and the government's ambition to make India a cashless nation. The researcher observed that following COVID-19, we are all using the digital payment system to its fullest potential.

Swati Kulkarni and Aparna J. Varma (2021) made an effort to understand how consumers feel about online payments and their security. This study attempts to comprehend the frequency of digital payments and the factors influencing the difficulties consumers encounter when using digital payments. payment methods that could influence how consumers perceive you. The researchers also claimed that the investigation is exploratory in nature and depends on secondary data and literature reviews. The study has a number of shortcomings, including the fact that it is not a comprehensive review of the literature, it does not employ any quantitative data, and it is not in-depth.

Mate & Kapdi, 2021) examined the significance of digital payments in the COVID-19 pandemic as well as customer perceptions of the use of digital payments throughout the pandemic. Irrespective of their demographic traits, they gathered primary data. Totaling 113 There were responses. The secondary data was also gathered from government reports, various websites, including the Government of India's gateway for digital payments. When consumers were questioned about their experiences with the E-wallet during the COVID-19 period, they reported that it was convenient, secure, and simple to use. During the COVID-19 outbreak, they also observed a spike in orders placed on e-commerce websites and apps for food, entertainment and food.

(Manocha et al.2019) The researchers highlighted and said in their research that the number of transactions through e-wallets reportedly grew from 17 lakhs per day to 63 lakhs per day after gathering secondary data from numerous research papers and articles. Additionally, it was observed that small market vendors began installing Point of Sales (POS) devices inside their establishments in order to take payments online in a number of major cities. Furthermore, it is clear from earlier research and statistics that there are some significant obstacles and constraints that must be taken into account and resolved. Potential changes in this direction include Because the Reserve Bank of India is the source of the data used for analysis, it is becoming more challenging. .

(Singh, Shamsheer, Rana, 2017) studied the adoption of a product and the effect of demographic characteristics on consumer perception. digital payment method. They gathered first-hand information from 150 respondents who were located throughout Delhi for the study. They discovered that demographic characteristics, with the exception of education, have no bearing on the uptake of electronic payments. This conclusion was backed by an ANOVA calculation because there was no discernible difference in how respondents felt about gender, age,

profession, or annual income. It suggests that a customer's level of education affects their decision to use digital payment.

(Singh, Shamsher, Rana, 2017) investigated how a product is adopted and how demographic traits affect consumer perception. For the study, they obtained first-hand information from 150 respondents who were spread out over Delhi. They found that the adoption of electronic payments is unaffected by demographic factors, with the exception of education. There was no noticeable variation in respondents' perceptions of gender, age, profession, or annual income, which was supported by an ANOVA calculation. It implies that a customer's decision to use digital payments is influenced by their degree of education. If a person has maintained their education beyond matriculation, they are more likely to use the digital payment option.

RESEARCH METHODOLOGY

The study is based on primary as well as secondary data. This was to define the target population to be surveyed. The sampling unit for the research was the population using digital payment and the target unit was the academicians. For the collection of primary data a well-structured questionnaire through Convenience sampling method was floated among academicians. The primary data used in this study was gathered from 80 respondents who were academicians in various fields. A questionnaire was created to gather information from respondents in order to search academicians' perceptions of digital payment. The survey was conducted using Google and paper forms. Total 40 google forms were shared with the respondents in virtual mode but only 34 responses received in virtual form and the rest 40 forms were filled by respondents in physical mode. The data collected from 74 respondents were finally used for data analysis.

OBJECTIVE OF Study

- To know the benefits of digital payment.
- To analyze the perception of academicians about digital payment.

BENEFITS OF DIGITAL PAYMENT

Digital payment offers a range of benefits that have transformed the way we handle financial transactions. Some key benefits include:

1. Convenience: Digital payment methods provide unparalleled convenience. Users can make payments anytime, anywhere, using their smartphones, tablets, or computers. This eliminates the need to carry physical cash or visit a bank branch, making transactions quick and hassle-free.

2. Speed and Efficiency: Digital payment systems enable near-instantaneous transactions. With just a few clicks or taps, funds can be transferred from one account to another, reducing the time spent on processing payments. This efficiency is particularly valuable for businesses, as it accelerates the cash flow and improves operational efficiency.

3. Security: Digital payment methods prioritize security measures to protect users' financial information. Encryption techniques and secure authentication processes ensure that sensitive data is kept safe during transactions. Additionally, features like tokenization, biometric authentication, and transaction alerts add extra layers of security, reducing the risks associated with cash handling and traditional payment methods.

4. **Financial Inclusion:** Digital payment systems promote financial inclusion by providing access to financial services for underserved populations. Individuals who do not have access to traditional banking systems can use digital wallets or mobile banking apps to make transactions, receive payments, and manage their finances. This empowers them to participate in the formal economy and opens up opportunities for saving, investment, and access to credit.

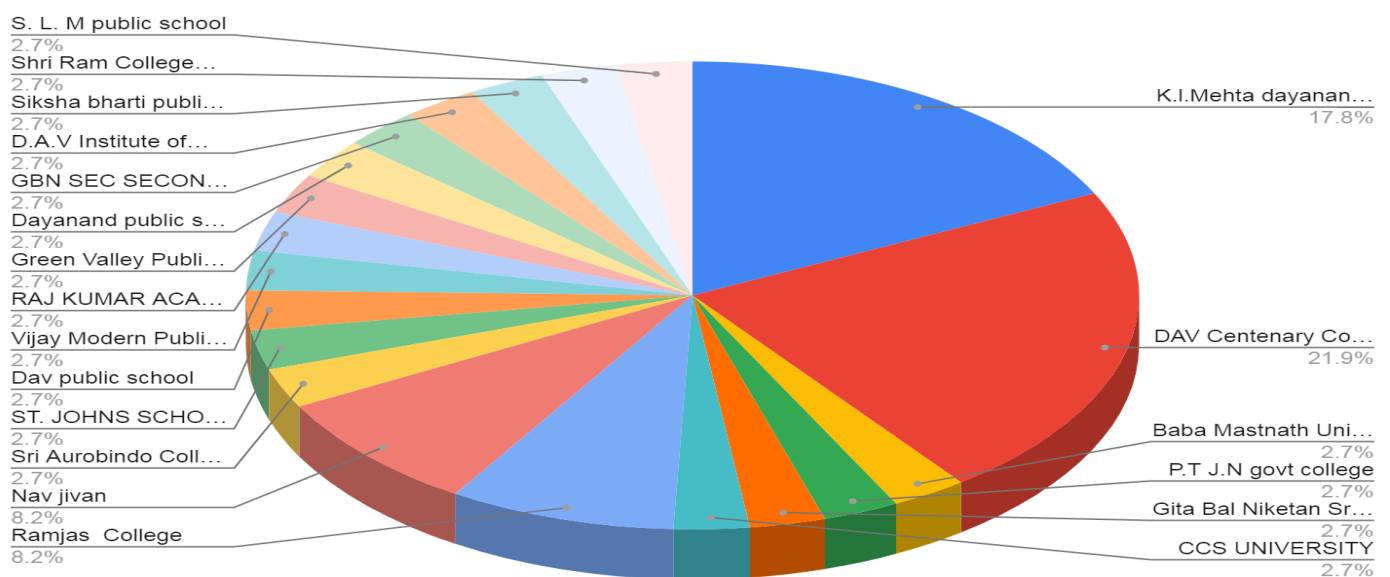
5. **Cost Savings:** Digital payment methods can lead to cost savings for both consumers and businesses. With digital transactions, there is no need for the physical printing, transportation, and storage of cash or checks. Businesses can reduce administrative costs associated with handling cash, counting, and reconciling payments. Additionally, digital payment platforms often offer competitive or lower transaction fees compared to traditional payment methods.

6. **Enhanced Record-Keeping and Analytics:** Digital payment systems generate digital records of transactions, providing individuals and businesses with detailed and accurate financial data. This simplifies record-keeping, making it easier to track and manage expenses, receipts, and invoices. Moreover, the aggregated data from digital transactions can be analyzed to gain insights into consumer behavior, spending patterns, and market trends, enabling businesses to make informed decisions and tailor their offerings accordingly.

7. **Global Accessibility:** Digital payment methods have enabled seamless cross-border transactions, facilitating international trade and e-commerce. With digital wallets and online payment gateways, businesses can expand their customer base globally and transact with customers from different countries, removing geographical barriers and increasing market opportunities.

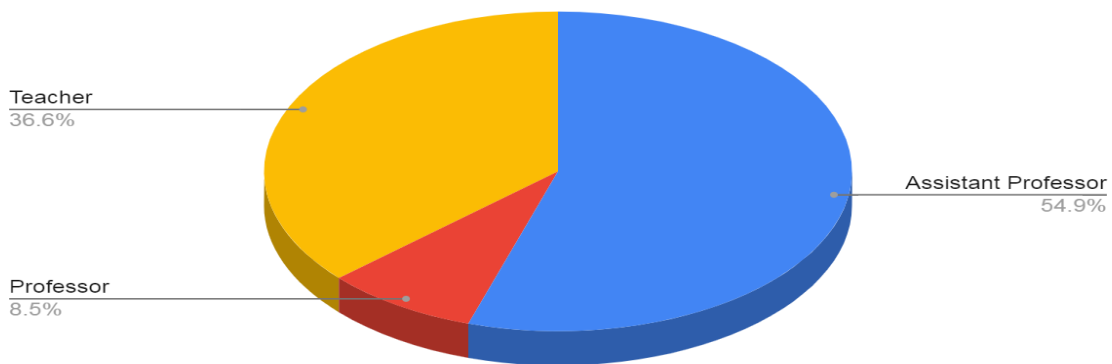
In this study 10 academic institutions teachers responded. Google form and paper form distributed among 80 respondents.

Count of College/School name

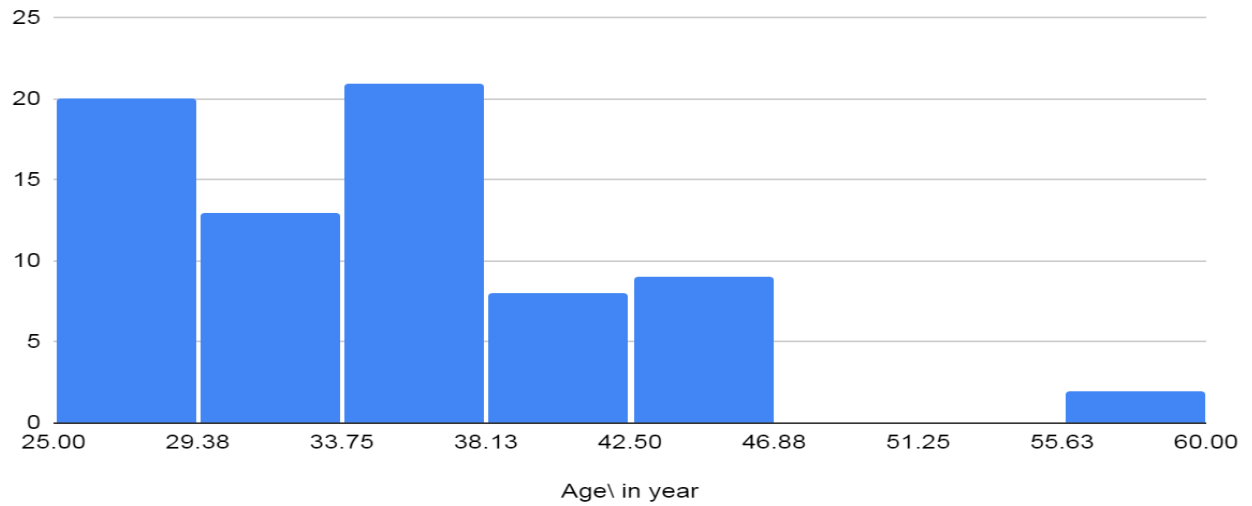


This graph shows that 54.9% are assistant professors, 8.5% respondents are professors and 36.65 respondents are teachers. this study is about academicians so all respondents belong to the teaching fraternity.

Count of Designation



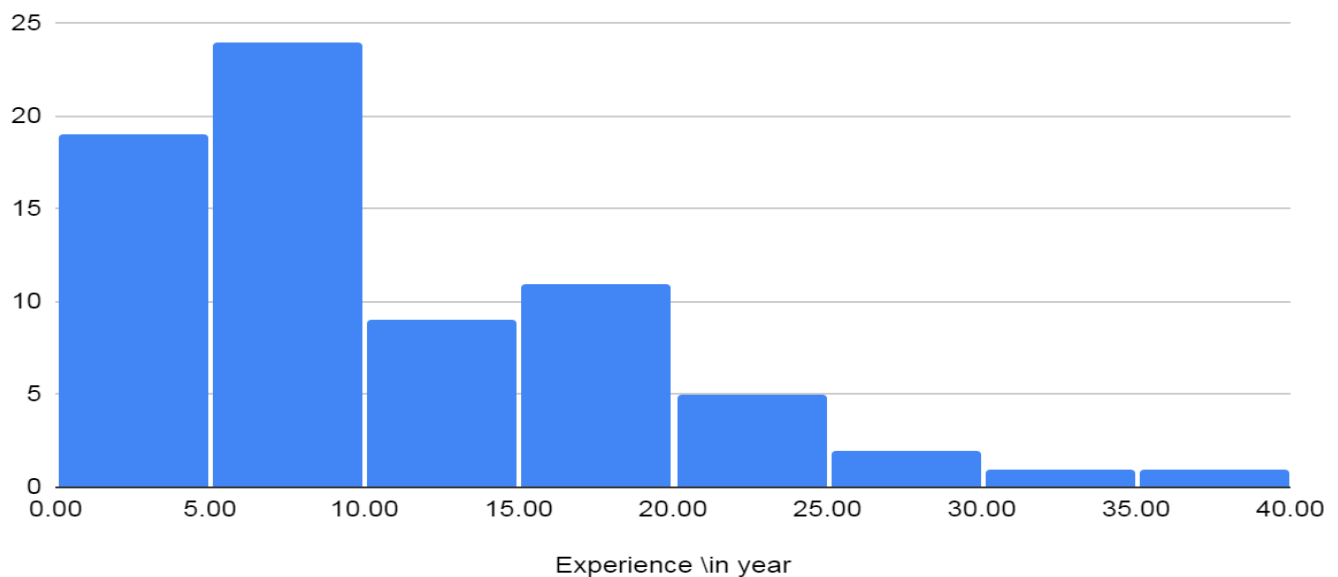
Histogram of Age\ in year



This table concludes that 20 respondents are of 25 to 30 year age group, 17 respondents are of 30 to 35 year age group, 18 respondents lie between 35 to 40 age group and 15 respondents are of 40 to 45 years age group and 4 respondents are more than 45 years.

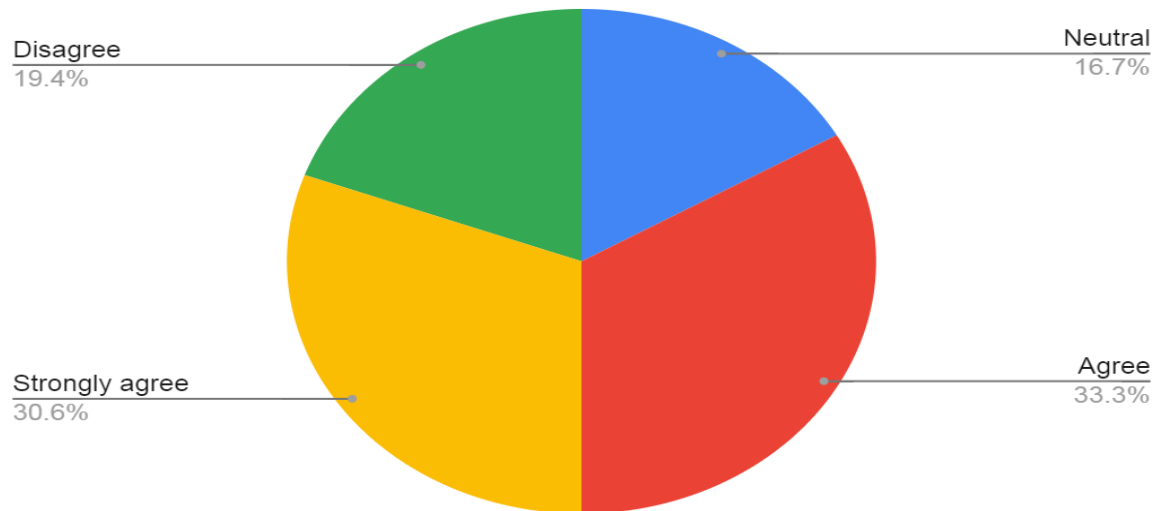
This graph analyzes that 30.3% respondents lie between 5 to 10 years experience, 23.3% respondents have lies in 10 to 15 years experience, 12.2% lies between 15 to 20 years experience and 27% respondents have more than 20 years experience.

Histogram of Experience \in year



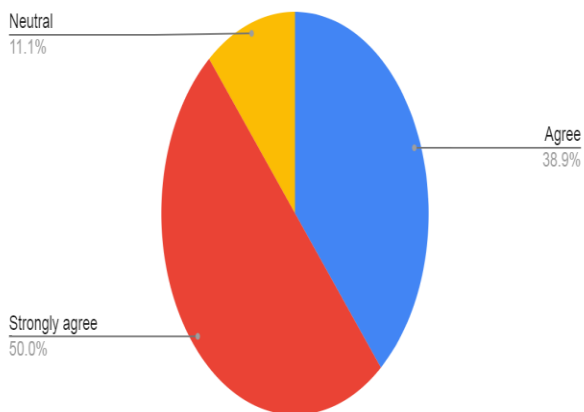
This graph conclude that 19.4% respondents feel safer with traditional payment mode,30.65 respondents feel safer with online Payment and strongly agree, 33.3% respondents agree that they feel safer with digital Payment and 16.7% have no response about online Payment.

Count of Paying online is safer than traditional payment

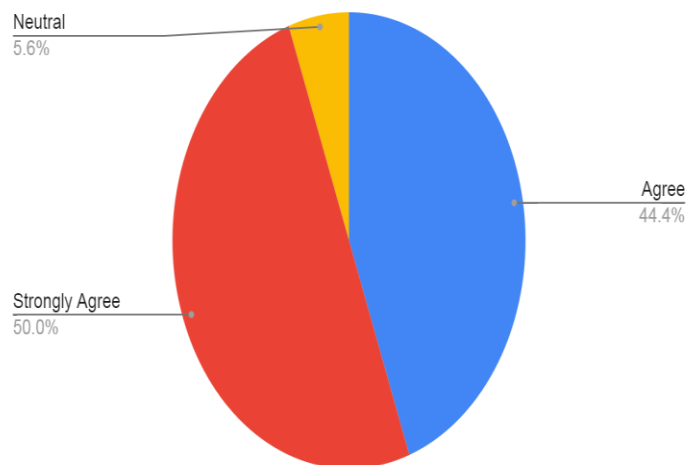


This graph reveal that 50 % respondents are strongly agree and 44.4% agree with the availability of proof but 5.6% respondents are neutral about proof availability.

Count of Online payment offer better choices to users through its features

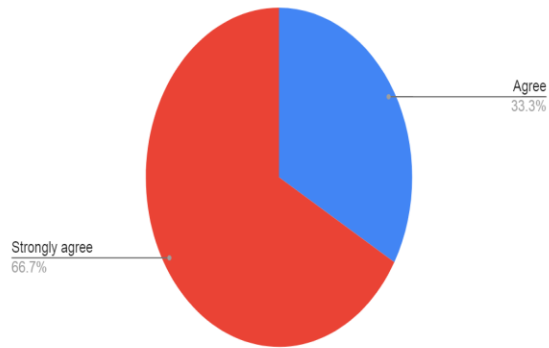


Count of There are always proofs of payment



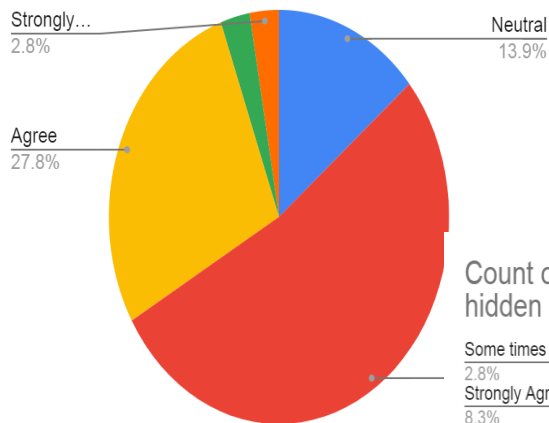
This graph analyze that almost all Respondents agree that digital Payment saves time. As the graph shows that 66.7% respondents strongly agree and 33.3% respondents are Agree that digital Payment saves time.

Count of Paying Online saves time.

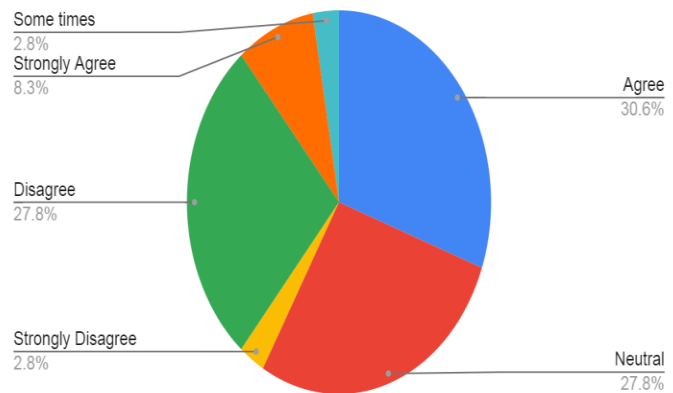


This graph analyze that 2.8% respondents are strongly agree that they don't feel problem in online payment,27.8% respondents are agree that they don't face problem in digital payment

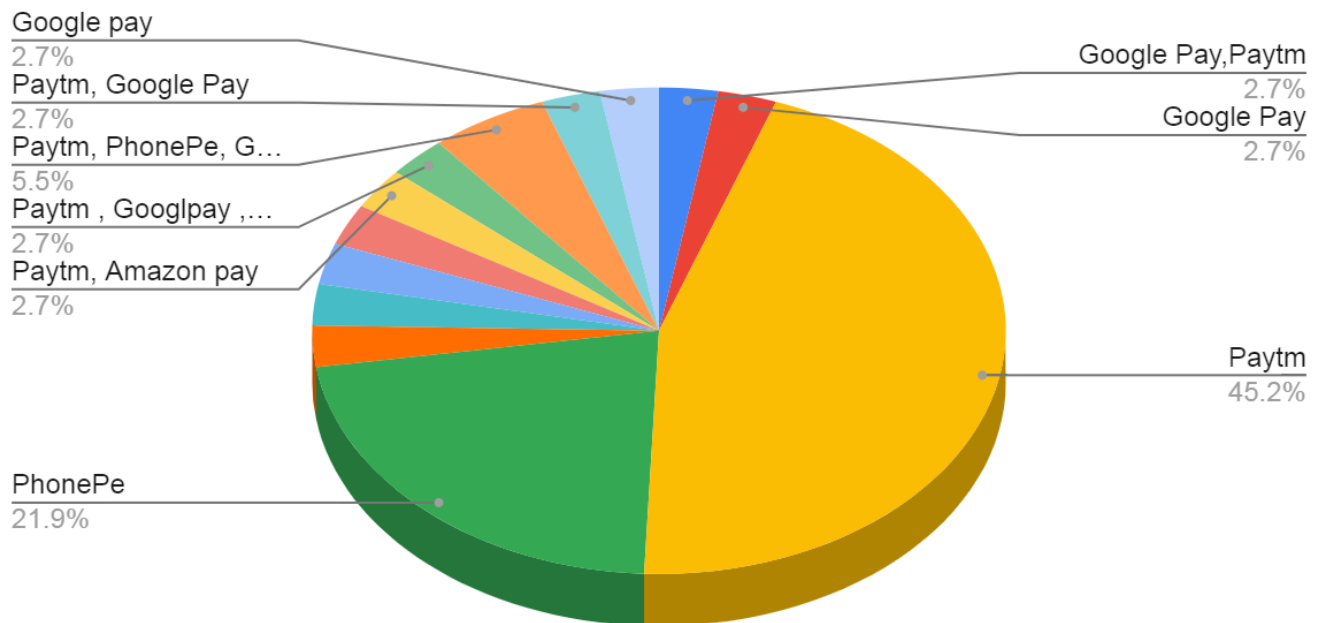
Count of I often make transaction online and face no problem



Count of Online payment cost are hidden



Histogram of Count of Which app you use for online payment



Above graph shows that Paytm is the most favorite mode of digital payment as among 74 respondents 38.9% respondents use Paytm 16.7% respondents use phone pay and other mode.

Findings

Classification of respondents revealed that the majority are female.

The rate of awareness about digital payment is good enough, only a small portion of respondents are neutral.

Most respondents use digital payment mode in daily routine life.

Study also reveals that the younger generation uses digital payment mode more than the old age group due to more technical know-how.

Majority of respondents agree that digital payment mode is safe.

Also it is wonderful to know that respondents rely on digital payment mode due to proof of payment when they make digital payment.

It is an achievement for a country like India where literacy rate is not very good but digital payment mode is becoming fastly acceptable mode of payment.

Suggestions

In order to make the transactions more safe, fast and flexible these E-wallets need to be improved a lot.

It is also a matter of thinking that more respondents are preferring some E-wallets due to their better services as paytm is the most favorable E- Wallet therefore other E-Wallet have to improve their features in order to become a successful wallet.

Conclusion

The study was conducted to examine the perception of academicians about digital payment. Many digital payments modes like Paytm, phone pe, Google pe got wide acceptability and everyone who uses these modes of digital payment are satisfied with their services. From data collected it is clear that none of them were satisfied with electronic wallets. The study was focused on academicians and their responses do not equalize the response of students and those who do not use smartphones and have ignorance about digital payment modes. This study makes us understand that academicians who are teaching the younger generation are much more up to date with innovation and technology.

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A Bibliometric Analysis of payment banks: A digital step towards sustainability

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Abstract

Purpose: The main objectives of this study are to evaluate the future research directions for payment banks and to examine the important elements of payment banks and Fintech.

Design/methodology/approach: This paper uses a variety of software applications, including Excel and the Vos viewer. To create networks among researchers, organisations, countries, publications, and phrases in science, use the Vos viewer.

Findings: The analysis of the citations of authors, out of 2798 authors only 37 authors are prominent authors who publish more than 5 papers in this area which are Rabbani m.r, Sun y., Hasan M.K, tan B..

Originality: This article adds to the body of literature by focusing on four categories of payment bank research streams: digitalization, sustainability, fintech, and payment banks, which collectively represent the most promising future trend.

Key words- Bibliometric, Digitalization, Fintech, Payment banks, Scopus Core Collection, Sustainability, VOS viewer.

Introduction

Payment banks are new era banks as they provide limited but easily accessible services. Main motive of payment banks is to provide the financial services to small business, low-income groups, migrant labour workforce. RBI established it with an aim to expand the level of financial services to the remote areas of the country. Payment banks have some pros and cons. Payment banks are now limited to many services like they can accept deposits which is limited up to Rs 2 lakh per customer and also, they cannot lend money but payment banks can operate accounts and also issue financial services to their customers like ATM card, debit card, net banking. Payment banks have a multiplier effect on the banking system because it offers low cost doorstep services to people and can also give tough competition to traditional banks in the future (Jeucken & Bouma, 2017). The payment bank's primary purpose is not traditional trading but to serve people with an intention of motivating cashless transactions. Fintech and payment banks will have an increasingly important role to play in the route towards sustainability. The objective of this study is to have a clear understanding of the current research in the area of payment banks. The article is conceptual in nature and is based on bibliometric analysis. The analysis is based on the data taken from Scopus platforms.

(Arner et al., 2020) On the basis of previous research suggest that to develop sustainability through digital payments we have to concentrate on 4 primary pillars. The FIRST one is simplifying the digital transactions, account opening, and e-KYC systems, to open most suitable and compatible electronic payment systems, using the infrastructure to underpin electronic provision of government services and payments, design of digital financial systems, so that access to finance and investments can expand. By adopting these 4 pillars, we can transform the economies and societies, through FinTech, sustainable investments, and financial inclusion.

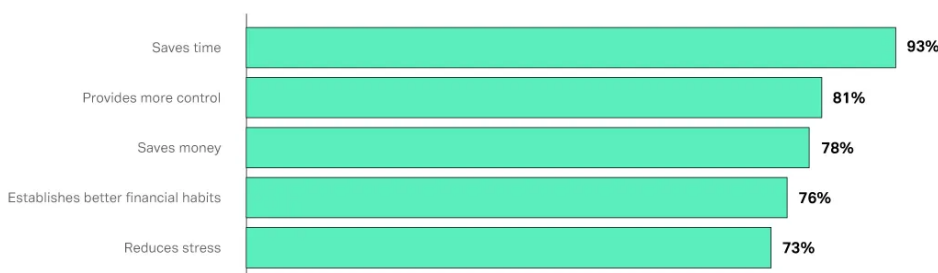
Nowadays sustainable development becomes an important aspect to be considered for every country. Basically, sustainable means use of natural products in such a way that continues for such a long time and also does not harm the environment or meet the needs of today's generation without compromising the needs of future ones.

Sustainable development goals are universal goals, adopted by the United nation in 2015 to ensure gender equality, to end poverty, to bring innovations and much more and also to achieve these goals by 2030.

There are in total 17 SDGs and they are integrated means action taken in one will affect the outcomes of another.

Over the last few years RBI and Financial regulators like IRDA, SEBI, PFRDA have faced many challenges regarding the digital transformation of financial systems around the world (Arner et al., 2020). Financial technology or FinTech is emerging as a new concept in digital banking. Fintech is a combination of “financial” and “technology”. It includes any app, software and technology that helps an individual or business to access digitally or to make financial transactions. Sustainable Finance and FinTech are now major policy focuses of most national governments and regulators(Alrawashdeh et al., 2022).

Top benefits of using fintech according to users



Source: The Fintech Effect, 2021

FinTech and Sustainability

Digital finance and FinTech together become important in achieving SDGs, along with they play three core roles in relation to achieving the SDGs.

Improving financial resource allocation to support sustainable development is the first step. The second is that the financial sector's development can aid in achieving the SDGs. Through development, financial resources are increased internationally, but especially in developing nations. Third, using FinTech and digital finance to help achieve the SDGs itself.(Anagnostopoulos, 2018).

Financial markets are mature enough to provide financial services like insurance, long term financing, investment opportunities and also support financial inclusion- particularly through fintech-contribute to all 17 SDGs(Arner et al., 2020).

(Venkatesan & SS, 2021) research shows that trust plays an important role in determining the sustainability of payment banks. If given a small bank licence, trust will play a significant role in assisting payment banks in disrupting conventional banking and digitalizing the world of payment systems. Perceived ease of use and intention to use are positively correlated.

In order to uncover research trends, undertake author cooperative analyses, build journals, and revolutionise a field of study, bibliometric analysis has been frequently used as a quantitative analysis tool.(C. Li et al., 2021)

Methodology

The bibliometric analysis combines mathematical and statistical techniques to examine the technological trends and advancements in science and technology with the purpose of eliminating all forms of illumination. (Zhang et al., 2021).

A few study subjects that can be used to predict the emergence of new technologies are measured using bibliometric techniques. (X. Li et al., 2015).

The methodology of the study is based on a number of scientific research techniques, such as measurement, observation, and comparison. Methodologies for statistical research, comparative analysis, and system approach are actively employed. The VOS viewer toolbox was used to show the analytical data. Applications of MS Excel's functionalities were used for the proper visual analytical research. Data from the Scopus platform's based on the number of publications in the field of payments banks and financial technology research served as the information base for research. The following criteria were used to define a sample of academic articles in order to achieve this goal: The article's title uses the phrases "payment banks" and "Fintech" exclusively; the time period is 1990–2023.

Initial search papers are approximately 31000 but after refining the result limit to business and management, economics and finance and also after sorting some keywords we got the approximately 1300 papers.

Additionally, the use of various methods such as grouping and comparative analysis made it possible to examine the nations in which the world's major research centres are concentrated and conduct research on the primary scientific fields in which payment banks are studied.(Haq & Bahit, 2021).

Results and Discussion

Identifying the characteristics of the financial services market's change in the digital era and defining new risks and benefits for clients that have been impacted by the financial services industry's digitization processes is the first step in developing new methodological concepts for studying banks of economic entities in the financial services market, is to comprehend the essence of payment banks as a universal category, advantages that a customer well get from payment banks(Almulla & Aljughaiman, 2021). Payments banks promote cashless transactions which is an important step towards sustainability.

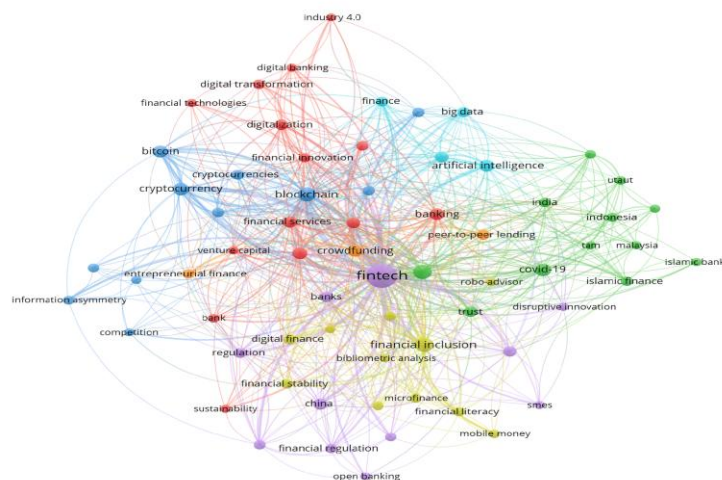


Figure 1. A graphic representation of the relationships between key phrases in publications relevant to network visualisation research in the payment banks sector

Source: Prepared by the authors using the VOS viewer program's tools and a study of the Scopus database.

Fig. 1, shows how keywords in this paper interact with research on payment bank and Fintech issues. Therefore from Fig. 1, We discovered that in articles about the direction of payment banks, scientists give the following areas the most consideration: Fintech, blockchain, and financial services. Financial inclusion, digitalization. This sample contained 66 keywords that are often used in articles on payment banks. Additionally, we would like to point out that the field of payment banks is currently highly important, and according to pertinent research, a very long list of issues may be solved by assuring the effectiveness of financial markets and the development of technology for those markets.

- **Co-authorship between countries**

Recently, the concept of payment banks are now adopted by many countries, maybe because they are now moving towards sustainability or cashless transactions. Development of more payment banks means there is development in financial technology. Fig2 shows where the most of the publications come. Many countries like France, Italy, Malaysia have recently adopted the concept of payment banks or we can say that they are moving towards sustainable development. China and the United States are the most prominent countries from where the most of the publications come, maybe because they are more financially developed countries or financial technology are more developed in those countries. Recently, the United Kingdom and India are moving towards sustainable development and opening more and more payment banks.

In total 5 clusters are formed including 27 items.

Cluster 1 (7 items): China, Singapore, South Korea, Spain, Taiwan, Turkey, United States

Cluster 2 (7 items): Bahrain, India, Italy, Malaysia, Pakistan, Russian Federation, United Arab Emirates

Cluster 3 (6 items): Germany, Netherlands, South Africa, Switzerland, United Kingdom, Vietnam

Cluster 4 (4 items): France, Indonesia, Poland, Ukraine

Cluster 5 (3 items): Australia, Canada, Hongkong

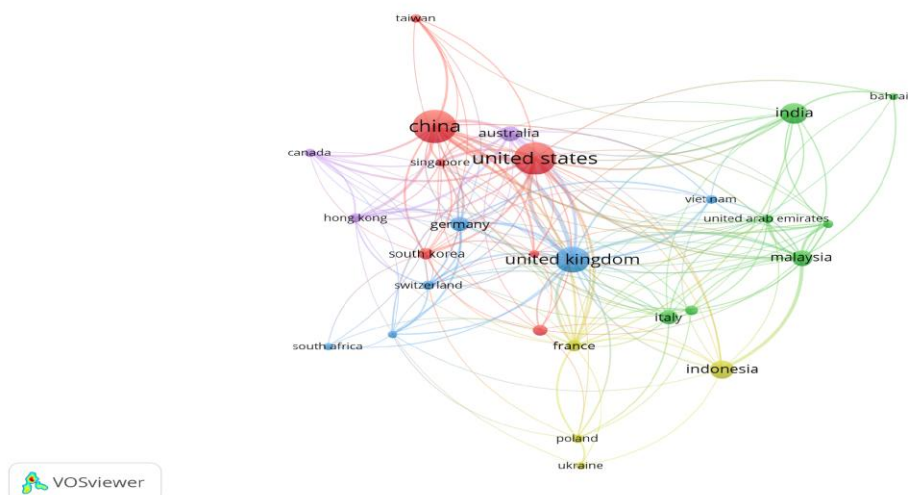


Figure 2. A graphic representation of the relationships between key phrases in publications

relevant to network visualisation research in the payment banks sector

Source: Prepared by the authors using the VOS viewer program's tools and a study of the Scopus database

There are many journals who are working in this area, who are more focused towards the payment banks and fintech. If we go for citation of journals, which means which journals have more citations than we got to know that out of 978 journals 56 journals are those which are having minimum document in this area, 5 having minimum citation 20.

- **Citation with authors**

There are also many prominent authors who have important contributions in this area. Those are more aware about the importance of payments banks and their contribution towards sustainability. Figure 3 shows that If we opt for citation of authors or we want to see their contribution towards this area then we got to know that out of 2798 authors only 37 authors are prominent authors who publish more than 5 papers in this area which are Rabbani M.R, Sun y., Hasan M.K, tan B.

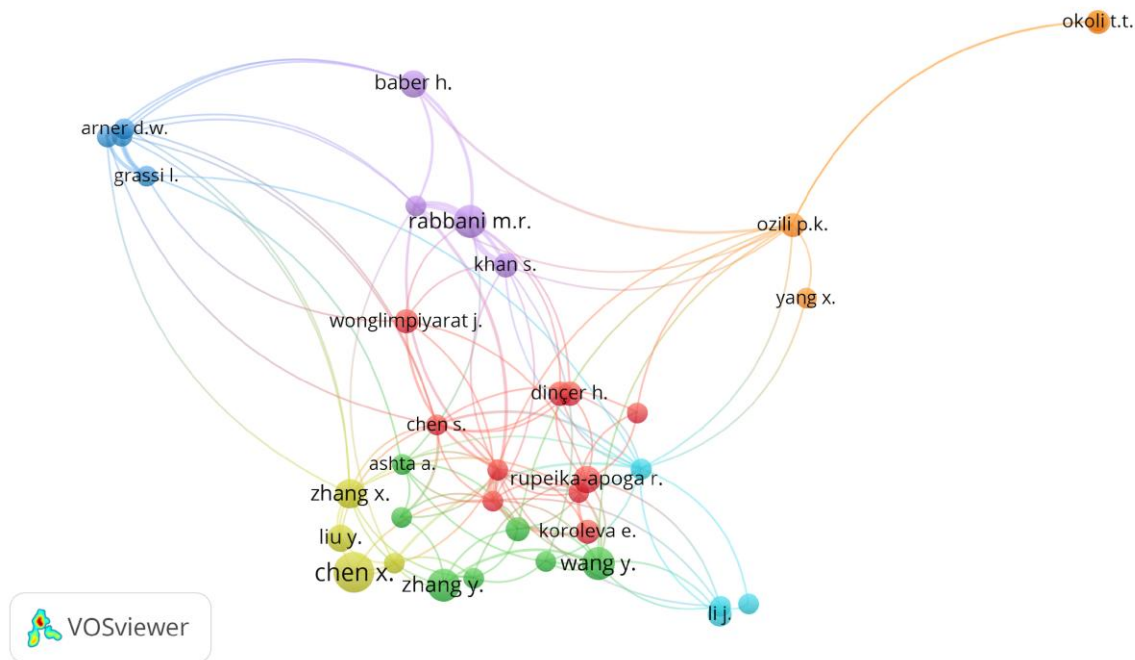


Figure 3. A graphic representation of the relationships between key phrases in publications relevant to network visualisation research in the payment banks sector

Source: Prepared by the authors using the VOS viewer program's tools and a study of the Scopus database

- **Analysis of co-citation**

There are many authors who are co-cited together. In Vos viewer co-citation basically means which 2 authors or which authors are co-cited by others. Figure 4 shows that red connecting lines means these are the prominent authors who are working on a similar topic. Buckley, R.P and Arner, D.W are the most prominent authors who are working on the similar topic.

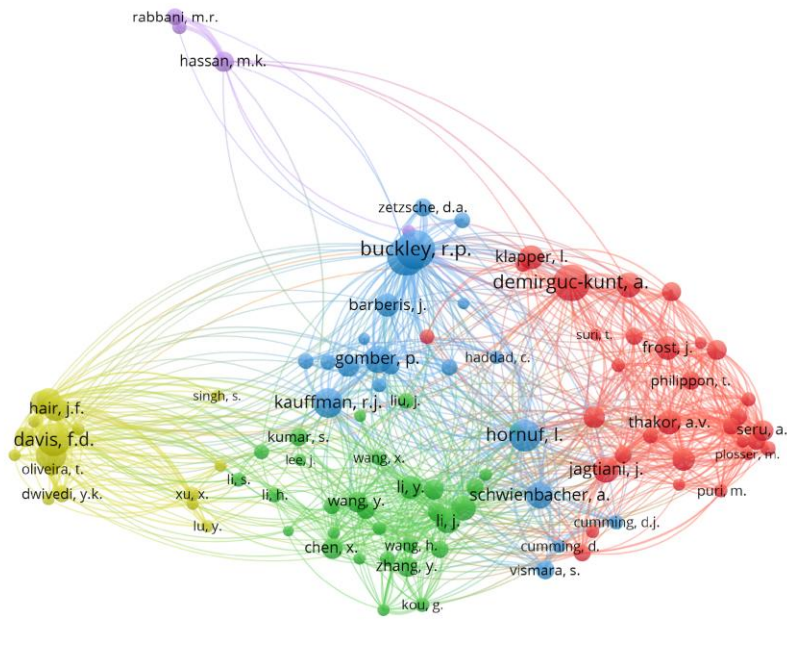


Figure 4. co-citation with author

Source: Prepared by the authors using the VOS viewer program's tools and a study of the Scopus database

● **Bibliographic coupling**

In order to identify core items, this study analyses bibliographic coupling on our dataset using the VOS viewer. The method is typically applied to determine which two works in a bibliography include a single quotation from a third work, as well as to automatically cluster massive data sets. Figure 5, which shows the bibliographical connection of documents, supports this. Out of 1247 documents 52 documents meet the threshold of having citation 70. The findings of this analysis suggest that there are six clusters, and the most often referenced sources are Gomberp. (2018) and lee i. (2018).

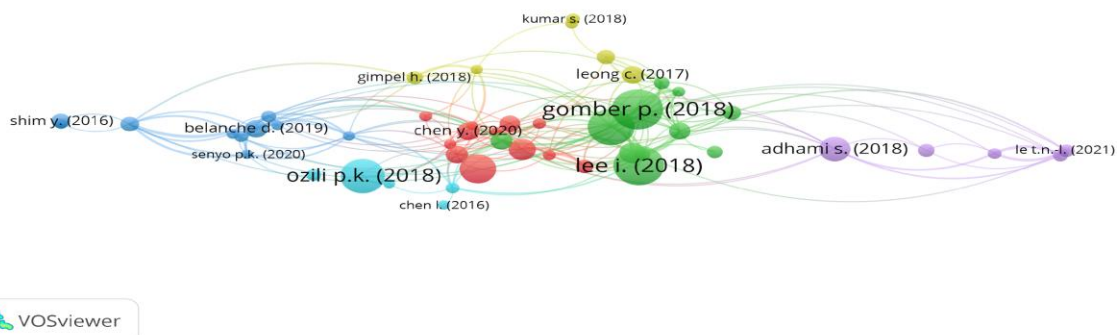


Figure 5. Bibliographic coupling of Documents.

Source: Prepared by the authors using the VOS viewer program's tools and a study of the Scopus database

Conclusion and Future Directions

The study concludes that, since technology innovation expanded to include financial services a decade ago, the number of payment banks has been rising quickly. Financial services have also been impacted by international trends in banking and finance, which has led to a rise in publications worldwide. The report also provides a list of the most significant payment banks papers, Fintech papers, authors, nations, organisations, and journals based on the Scopus database. The analysis was prepared with the help of powerful Excel software programmes and the VOS viewer. Following the application of specific constraints or criteria, it can be said that between 1990 and 2023, roughly 1300 papers have been published in this field. According to the survey, the prevalence of payment banks and fintech papers peaked in 2020.

Rabbani MR and Wang y. were the most relevant authors having 9 papers each in the field of payments banks and Fintech. Moreover, Journal of economics and business was the most relevant or most prominent journal with 12 publications. In the area of payment banks and Fintech, China was the leading country with 206 documents. Currently this paper found that Rabbani m.r, Sun y. are most prominent authors have most often cited articles having 211 and 206 citations.

Additionally, Gomber P. (2018) and Lee I. (2018) obtained the largest numbers of co-cited publications, with 167 and 165, respectively. This data shows that Buckley R.P. and Arner D.W. are among the most prolific payment banks and Fintech researchers. The co-citation study also showed that China and the United States have done the greatest research in this area.

The research in this paper demonstrates that five clusters with a total of 64 items were produced by analysing the bibliographic coupling of sources are technological forecasting, finance research letters, financial innovation, journal of risk and financial, electronic research commerce. Payment banks and fintech both refer to the use of technology to improve the delivery of financial services. Both are the steps to promote sustainability and cashless transactions. Payment banks are more towards the development of financial technology(fintech) because then they are more efficient in their transactions.

Increased environmental awareness gives way to a new wave of sustainable banking practices. Payment banks are also a step towards sustainability or towards sustainable development because they are promoting cashless transactions. Payment banks are more focused towards fintech, so that it will be helpful in attaining sustainability.

Despite the article's insightful observations, there are a number of limitations that readers should be aware of. First, to find the initial list of scholarly works published and indexed by Scopus, this study used specific search terms and keywords. However, this method has been widely used in earlier bibliometrics-related studies. Scopus is one of the largest online databases that indexes all scholarly works, but it does not include all of the sources. Therefore, some exclusions from this study are definitely to be expected. Furthermore, no search term can fully capture all the academic works in this field. As a result, inaccurate results—both positive and negative—are always expected.

Second, FinTech is a term that has only recently started to be used. There is a chance that prior research on different topics was centred on financial technology. However, the term "FinTech" was not used specifically. These studies were therefore not included in this analysis. Despite these drawbacks, this study provides a global perspective of the current FinTech research trend.

By examining this bibliometric study, it can be inferred that one of the interdisciplinary research fields that can look into topics from various fields and areas is payment banks. Future studies

might also concentrate on payment banks over an extended period of time rather than in groups as they were in this paper. Therefore, based on the recommendations made by the authors of this research and the authors of the works cited in it, the researchers are proposing new lines of inquiry.

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A study of Sustainable Economic Development with the aid of Human Capital

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Abstract

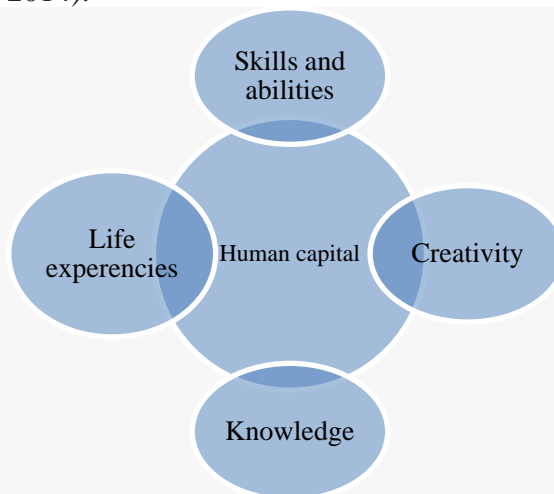
Human capital is the value an employee's skills and expertise have economically. Employers value qualities like dependability and punctuality as well as skills, abilities, and good physical and mental health. Due to the fact that it cannot be included on a company's balance sheet, it is an intangible asset or quality. Investments in human capital are thought to increase productivity and profitability. The more a firm invests in its employees, the more likely it is that it will be productive and successful. The purpose of the research study is to examine how human capital contributes to an economy's long-term growth. The results of the study demonstrate that since there is a strong association between them, human capital can contribute to economic development.

Keywords: economic value, human capital, physical and mental health, profitability, and productivity

1. Introduction

1.1. Interpretation of human capital

The skill base of the labour force is known as human capital. These abilities will flow once the return on investment outweighs the cost (direct and indirect). These returns are private in that they boost a person's capacity for productivity as they get more of them (Goldin,2016). The term "human capital" relates to people's individual knowledge, information, ideas, talents, and health. The "age of human capital" is currently in effect since human capital is by far the most significant form of capital in contemporary countries. How much and how well people invest in themselves determines the economic prosperity of both individuals and entire economies (Becker., 2002). As a result, it is hypothesized that as human capital rises, employment growth elasticity would fall. This will reduce the economy's dependence on labour and boost economic growth(Ployhart et al., 2014).



Source: The author

Note: Diagram that represents four basic qualities of human capital.

1.2.Exemplification of sustainable economic development

A national program called Sustainable Economic Development uses the distinctive strengths of local economies to tackle the problems that each one faces and bring about measurable advantages in the real world. From our vantage point, sustainable development refers to economic growth that upholds the welfare, or per capita incomes, of a population. The idea of sustainable development emerged from environmental concerns, and for many observers, it refers to preserving and safeguarding the natural world as a means of supporting economic growth. In our opinion, human capital is just as crucial to sustainable growth as the physical environment. We adopt this viewpoint because human capital—the primary driver of economic growth in contemporary economies—can depreciate and become obsolete just like physical or tangible capital. For sustainable economic development, there is requirement of the following things

- ✓ Human development: The process of expanding people's freedoms and possibilities while also enhancing their well-being is known as human development
- ✓ Social capital/institutional development: In order for a society to function well, social capital is defined as "the networks of relationships among people who live and work in that society."
- ✓ Nonfarm economy: The rural non-farm economy (RNFE) can be characterised as consisting of any waged job or self-employment activities in income-generating activities that are not agricultural but nevertheless generate income (including remittances, etc.). rural regions
- ✓ Infrastructure development: A nation's infrastructure must be developed if its industries and overall economy are to expand. Electricity, roads, telephones, railroads, irrigation, water supply, and sanitation, ports, airports, warehousing facilities, and oil and gas pipelines are the main components of the infrastructure sector.
- ✓ Industrial clustering and small and medium enterprise development: Micro, small, and medium-sized businesses dominate the private sector in developing nations and provide for a sizable portion of employment and income prospects. However, because businesses frequently operate in isolation, are forced to follow anticompetitive production patterns, and are unable to contact innovative business partners who could provide new knowledge and experience, their development potential frequently goes unrealized.
- ✓ Poverty reduction and equity: The goal of poverty reduction, also known as poverty relief or poverty alleviation, is to permanently raise people out of poverty by a combination of humanitarian and economic interventions.

2. Review of literature

Given the low level of human capital, social security can boost productivity by developing human capital. However, when human capital increases, social security's role in encouraging investment in human capital is diminished, making the impact of social security on productivity growth obscure. Fortunately, if there are other ways to encourage the building of human capital to escape this trap, welfare expansion will be accompanied by rising productivity (Zhang et al., 2019). In Indonesia, high, quality, and sustained economic growth will support four crucial pillars for regional economic development. The four key pillars are entrepreneurship, social capital, human capital, and institutional capital. First, we draw the conclusion that there is a very strong correlation between human capital and quality economic growth and that this relationship is both positive and substantial. This leads us to believe that human capital is the primary factor in promoting high-quality, sustainable economic growth. (Prasetyo et al., 2020).

There is a connection between human resources and organizational sustainability, which is based on economic, social, and environmental performance. Management issues including innovation, cultural diversity, and the environment are significant factors in this relationship. The development of a model based on a strategic and central posture of human resource management is facilitated by the inclusion of components from the triple-bottom-line approach. (Jabbour et al., 2008). Consuming in a productive way leads to the accumulation of human capital, and having human capital fuels the growth of social capital. The ideal growth rate of consumption is determined, and it is demonstrated that the equilibrium growth rate is affected by the buildup of both social and human capital (Dinda., 2008). When children are plentiful, rates of return on investments in human capital are high compared to rates of return on children, and when children are in short supply, rates of return on investments in human capital are low compared to those on children. As a result, cultures with low levels of human capital tend to favour big families and make little investments in each member, while societies with high levels of human capital adopt the opposite behaviour. There are two stable steady states as a result. While the other has smaller families and maybe increasing physical and human capital, the first has enormous families and little human capital (Becker et al., 1990)

Therefore, the authors conclude that A good social environment enhances institutional quality that will have an impact on economic activity and, in the long run, economic growth. On the one hand, sustainable economic development creates more resources that are available and better conditions for the nation's well-being.

3. Objective of the study

The main objective of the study is as follows:

- ✓ To study the role of human capital in Sustainable Economic development.
- ✓ What are the various policies which are required for sustainable economic development?

4. Results and analysis

4.1. Basic essentials of human capital

There are basic essential of human capital which is required for sustainable economic development.

- ✓ **Knowledge:** A sort of awareness or familiarity is knowledge. It is frequently taken to mean factual knowledge or practical abilities, but it can also refer to familiarity with things or circumstances. The term "knowledge of facts," also known as "propositional knowledge," refers to a real belief that may be distinguished from an opinion or educated guess by the use of evidence. Although most philosophers believe that propositional knowledge is a type of true belief, many philosophical debates centre on justification.
- ✓ **Technical know-how:** Technical know-how includes all information and knowledge, both documented and unrecorded, pertaining to the creation, production, installation, and use of the Product.
- ✓ **Skills:** A skill is the acquired capacity to move with deliberate intent and good execution, frequently in a predetermined window of time or energy, or both.
- ✓ **Good health:** The World Health Organisation (WHO) has long defined health as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity," which was first stated in 1948.
- ✓ **Education:** Education is the dissemination of information, abilities, and moral qualities. There are numerous arguments over its precise description, such as the objectives it seeks to fulfil.

- ✓ Creativity: The phenomenon of creativity is the formation of something fresh and worthwhile. An invention, a printed literary work, or a painting are examples of tangible items that might be created. The created item can also be intangible, such as an idea, a scientific hypothesis, a musical composition, or a joke.

Figure -2: Basic requirement of human capital



Note: the authors

4.2. Steps for effective utilization of human capital

- ✓ Strategic HCM

A people-centered approach to HR called strategic human capital management (HCM) integrates various human resource functions into one cohesive system, including hiring and onboarding, payroll and benefits, workforce and performance management.

- ✓ Human capital

The information, skills, and health that people invest in and amass throughout the course of their life give them the opportunity to realise their potential as contributing members of society.

- ✓ Investment in human capital

An individual's skills at work are improved through the use of human capital, which increases productivity. One of the most significant forms of human capital investment has emerged as education.

- ✓ Competitive and economic growth

Economic growth refers to how much a country's production of products and services has increased and improved through time.

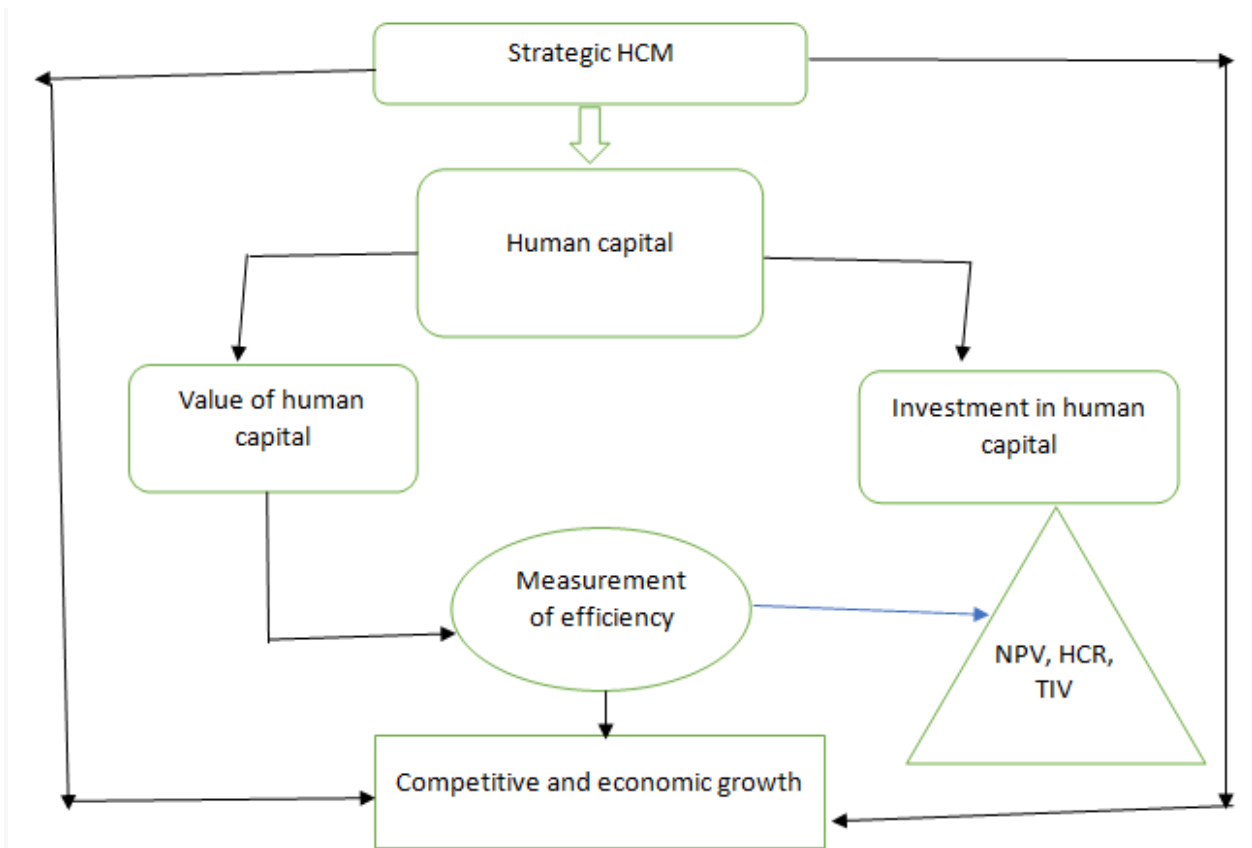


Figure 3. Effective utilisation of human capital Source: The authors

Conclusion

Natural, cultural, human, social, political, financial, and built capitals are among the seven community capitals. All types of capital are derived from human mental awareness, creativity, and social invention for their value, usability, and application. Because of this, productivity and sustainability of resource use are primarily determined by human capital, which includes social capital. Economic expansion and human capital have a close relationship. By enhancing people's knowledge and abilities, human capital has an impact on economic growth and can contribute to the development of an economy. The knowledge, skill sets, and experience that employees have in an economy are referred to as human capital. All productive capital stocks, including natural capital, which is currently frequently destroyed by economic activity, must be maintained or increased for sustainable development. Equally crucial is the preservation of human and social capital reserves. In general, talent management systems are thought to be composed of four "pillars": compensation management, performance management, corporate learning, and recruitment.

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Exploration of the Role of Media in Achieving the Sustainable Development.

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ABSTRACT

Media plays an important role in achieving a sustainable society. Media is a tool to achieve sustainable development. Media is very essential to disseminate information to the people at large and also helps in changing the perception of receivers. Sustainable development is a concept that has gained increasing importance in recent years, as the world grapples with environmental, social, and economic challenges. The media has a significant role to play in advancing sustainable development as a major influencer on public opinion and policy. The media may educate the public, disseminate information, and hold stakeholders responsible for their contributions to sustainable development. Growing awareness of the media's contribution to sustainable development has occurred recently. Media outlets all across the world have started to place a higher priority on sustainability reporting, with many setting up specific desks for it or recruiting specialized reporters to cover social and environmental issues. Additionally, there has been a trend in reporting towards a stronger focus on solutions, showcasing developments and programmes that support sustainable development. However, there are obstacles that the media must overcome to promote sustainable development. These obstacles include a lack of ability and resources, prejudice and inaccurate information, short-term thinking, cultural barriers, and a lack of money. This paper highlights the role of media in promoting sustainable development. This research paper also outlines the factors and challenges that the media faced during the promotion of sustainable development. I have used a qualitative approach and analysed the content through secondary data.

Keywords -Sustainable Development, Media, Factors, Challenges, Role Of Media

OBJECTIVES

a)The objective of this research paper is to highlight the factors and challenges that media has to face for sustainable development.

b)To explore the role of media

c)To highlight whether the media is playing its role properly or not.

METHODOLOGY

This research paper is written in a qualitative manner so we have followed the secondary data to prove the objectives of my research.

INTRODUCTION

The media plays a crucial role in promoting sustainable development by raising public awareness, facilitating informed decision-making, and holding governments and corporations accountable for their environmental and social impacts. These days the issue of sustainability is looming larger in society. Today the whole world is going through various technical and scientific transformations and it is high time to ponder upon the issue of sustainability to a large extent as a large part of our humanity is suffering from the fatal impact of pesticides. The whole world is passing through climate extremes, so the need of the hour is to focus on GEP, i.e., Gross Environment Product instead of GDP for sustainable growth. Delhi's senior journalist Mr Vinod

Varshney said in one webinar that political and criminal news predominates in the mainstream media. News related to the environment and science and technology etc. are often informative. They also lack proper follow-up. Mr Awayz Khan of Zee News, Delhi believed that governments and system are doing their work but citizens also have to be aware of this area. He said that TRP in television medium and their urban orientation is the main reason for the neglect of environmental news. Mr Vivek Mishra, Associate Editor of Down to Earth, explaining in simple language the widespread effects of environment and climate change on the environment, said that the media is prominently publishing and broadcasting the news of the nature of 'depression and fear'. Today there is a need to sensitize society and develop the spirit of doing something better in the minds of the citizens. He felt the need to understand the environment beyond the limited vision of the bear and cheetah. Mr Mishra also expressed his concern over the decreasing interest of the youth in the field of agriculture. Referring to the positive reports of the media, Mr Anmol Ohri, an activist and director of Climate Front Foundation, Jammu, said that the media should be warned about these issues in advance, citing the research work being done at the national and international level regarding natural disasters. But the ground for a comprehensive debate should be prepared. He also felt the need to develop a strong political resolve to understand environmental issues. Dr Hemant Joshi, a former professor of the Indian Institute of Mass Communication, expected the political leadership to take special socially useful initiatives in the era of fake news and post-truth. Prof. Sanjeev Bhanawat, editor of Communication Today and former chairman of the Mass Communication Center at Rajasthan University, said that man and nature have been companions of each other since primitive times. He said that amid challenges like decreasing greenery, vanishing water, global warming and exploitation of natural resources, today the future of human civilization is being questioned.

MAIN FACTORS OF MEDIA IN SUSTAINABLE DEVELOPMENT:

1. **Raising Awareness:** The media can raise awareness about environmental and social issues by reporting on the latest research, scientific findings, and global trends. Through print, broadcast, and online channels, the media can reach a large audience and educate them about the importance of sustainable development.
2. **Advocacy and Activism:** The media can also play a role in advocacy and activism, by giving voice to marginalized communities and promoting public participation in decision-making processes. Through investigative journalism and editorial coverage, the media can expose environmental and social injustices, and encourage citizens to take action.
3. **Corporate Accountability:** The media can hold corporations accountable for their environmental and social impacts, by reporting on their practices and exposing any unethical or illegal behavior. By doing so, the media can help to create pressure for companies to adopt sustainable business practices.
4. **Policy-making:** The media can influence policy-making by providing a platform for experts, policymakers, and civil society organizations to share their perspectives on environmental and social issues. By reporting on policy debates and outcomes, the media can shape public opinion and contribute to more effective policies.
5. **Innovative Solutions:** Finally, the media can promote innovative solutions to environmental and social challenges, by highlighting examples of successful projects, policies, and practices. By doing so, the media can inspire individuals and organizations to take action and contribute to sustainable development.
6. **Education and Information:** The media can educate and inform people about sustainable development issues, such as climate change, biodiversity loss, pollution, and social inequalities. Through informative programming, news coverage, and documentaries, the media can help individuals and communities understand the complexity of these issues and their implications for society.
7. **Partnership and Collaboration:** The media can foster partnerships and collaboration between

different stakeholders, such as governments, civil society organizations, businesses, and academia. By creating platforms for dialogue and exchange, the media can facilitate cooperation and collective action towards sustainable development goals.

8. **Public Opinion:** The media can shape public opinion and influence behaviour change towards more sustainable lifestyles. By promoting positive role models, showcasing success stories, and highlighting the benefits of sustainable practices, the media can inspire individuals and communities to adopt more sustainable behaviours.

9. **Technology and Innovation:** The media can leverage technology and innovation to promote sustainable development, by using digital platforms, social media, and interactive tools to engage with audiences and disseminate information. By embracing new forms of communication, the media can reach new audiences and create more impactful messages.

10. **Monitoring and Evaluation:** Finally, the media can play a role in monitoring and evaluating progress towards sustainable development goals, by tracking the implementation of policies and initiatives, and reporting on their outcomes. By doing so, the media can hold governments and other stakeholders accountable for their commitments and ensure that sustainable development remains a priority.

CHALLENGES THAT THE MEDIA FACES IN PROMOTING SUSTAINABLE DEVELOPMENT. SOME OF THESE CHALLENGES INCLUDE:

1. **Lack of Awareness:** Many media organizations may not have a deep understanding of sustainable development issues or the role that they can play in promoting them. As a result, they may not prioritize sustainable development stories or may not have the necessary expertise to cover them effectively.

2. **Commercial Pressures:** Many media organizations operate in a highly competitive and commercial environment, where profit-making is a primary objective. This can sometimes lead to a focus on sensationalism or entertainment rather than on serious, in-depth reporting on sustainable development issues.

3. **Political Pressures:** Media organizations can face political pressure, censorship, or repression in some countries or regions, which can limit their ability to report on sensitive or controversial issues related to sustainable development.

4. **Limited Resources:** Many media organizations, particularly in developing countries, may face resource constraints that limit their ability to cover sustainable development issues adequately.

5. **Lack of Data and Information:** In many cases, sustainable development issues are complex and data-intensive, requiring specialized knowledge and access to scientific research and data. However, many media organizations may not have the resources or expertise to access and analyze this information.

6. **Audience Disengagement:** Sustainable development issues can sometimes be seen as distant or abstract from people's daily lives, which can lead to audience disengagement and lack of interest. As a result, media organizations may struggle to attract and retain audiences for sustainable development stories.

7. **Lack of Collaboration:** Promoting sustainable development requires collaboration between different stakeholders, including media organizations, governments, civil society organizations, and businesses. However, there may be a lack of collaboration and coordination between these stakeholders, which can limit the impact of media efforts to promote sustainable development.

8. **Lack of Capacity:** Media organizations may lack the necessary skills and capacity to cover sustainable development issues effectively. For example, they may not have trained journalists or specialized reporters who can cover complex sustainability topics, or they may not have access

to the necessary technology or resources to produce high-quality multimedia content.

9. **Bias and Misinformation:** The media can also be prone to bias and misinformation, which can undermine efforts to promote sustainable development. For example, media organizations may give disproportionate coverage to certain sustainability issues, or they may promote false or misleading information that supports certain agendas.

10. **Short-termism:** Sustainable development requires a long-term perspective and a focus on addressing systemic issues. However, the media can be prone to short-term thinking and a focus on immediate events or crises, which can make it difficult to promote sustainable development effectively.

11. **Cultural Barriers:** Sustainable development is a global issue, but it is also deeply rooted in local cultures and values. The media may struggle to communicate sustainable development messages effectively across different cultural contexts, or they may encounter resistance or scepticism from audiences who do not share the same values or beliefs.

12. **Lack of Funding:** Media organizations that prioritize sustainable development reporting may struggle to secure funding to support their work. This can be particularly challenging in developing countries, where media organizations may rely on government or corporate funding, which can limit their editorial independence and ability to report on sustainability issues objectively.

LITERATURE REVIEW

- A) **Rupali V Wagh** states in a paper entitled "**Sustainable Development Goals And Role Of Media**" that media is an integral part of our daily life as media helps in shaping viewpoints and creating awareness of sustainable development goals. He pointed out that sustainable development is the only ingredient to reach the ladder of success. The successful social campaign that appeared in print and visual media has been seen in the age of digital at a world level. This paper also highlights how Toyota sponsored green campaign which was aired on NDTV has spread awareness among people to look after mother nature by involving the people to make a difference. Audio Visual mediums play a crucial role in maintaining sustainability issues such as poverty, climate change, inequality et cetera with the help of Government support and government initiatives like Beti Bachao Beti Padhao, SSA and Swachh Bharat Abhiyan. The mass media has the power appeal to attract common people to save and secure nature. Media can achieve all the targets of sustainable development through special kinds of discourse gimmicks and innovative tricks.
- B) **Prof. B Balaswamy and Ramesh Palvai Research**, Dept of a scholar at Osmania University, Hyderabad state in their research paper "**Role of social media in promoting sustainable development**", they emphasise that social media help in achieving sustainable development. Social media helps in creating awareness among people. There is a paradigm shift from industrialization, urbanisation and modernization to social media. As social media has been playing an important role in changing people's lifestyles. Important organisations which are working on handling environment-related issues are using social media platforms to create awareness. Social media platforms are also used to control the population and poverty eradication. All the platforms of social media are beneficial for the number of environmentalists to access user mind space.
- C) **Sabyasachi Sarker, Ng Nganthoi Khuman and Shilpa Arora's "Media -A Tool to achieve sustainable Society"** Shed light on the Sustainable use of scarce resources. Through different media, we can spread awareness. to conserve resources for a better future for our upcoming

generations, they said. Also, the government & NGOs are coming forward to educate people about the importance & usage of scarce resources. They mentioned the significance of Millennium Development Goals (MDGs) towards a sustainable future along with Sustainable Development Goals (SDGs). Leaving no one behind" - an important objective of this research paper. Along with it, this research paper talks about economic, Social. and environmental growth/development towards a Sustainable Future. This paper considers different social media platforms as a campaigning tools where different leaders are active prominently. They viewed media as a knowledge base for Spreading awareness about sustainable development. Through media, a large number of people can get to know about the do's & don'ts to protect our green planet. Media Covers a wide spectrum of topics which gives the closure of this research paper a media tool for sustainable development.

CONCLUSION

The media can play a multifaceted role in promoting sustainable development, by raising awareness, advocating for marginalized communities, holding corporations accountable, influencing policy-making, promoting innovative solutions, educating and informing, fostering partnerships and collaboration, shaping public opinion, leveraging technology and innovation, and monitoring and evaluating progress. The media's role is critical in creating a more sustainable and equitable future for all. The media plays a critical role in promoting sustainable development by raising awareness, advocating for marginalized communities, holding corporations accountable, influencing policy-making, and promoting innovative solutions. The media faces several challenges in promoting sustainable development, including lack of awareness, commercial and political pressures, limited resources, lack of data and information, audience disengagement, and lack of collaboration. Addressing these challenges will require concerted efforts from media organizations, policymakers, civil society organizations, and other stakeholders to prioritize sustainable development and create an enabling environment for the media to play a more effective role in promoting it. Overall, promoting sustainable development through the media is a complex and challenging endeavour. However, by recognizing and addressing these challenges, media organizations can play a critical role in raising awareness, promoting action, and holding stakeholders accountable for sustainable development outcomes.

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Green Computing -Future of Public Cloud in Building Sustainable Organizations

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Abstract:

"Cloud sustainability" is the use of cloud services to encourage sustainability within economic, environmental, and social systems. It covers both the environmentally friendly use of cloud services and the environmentally friendly operation of cloud service providers who deliver those services. Public cloud services offer a lot of potential for sustainability since they may centralize and scale out IT operations using a shared service paradigm. This will definitely increase the computing efficiency. The public cloud services market is expanding faster than ever because to four new developments in green computing that are broadening the range of cloud offerings and capabilities. These are: cloud ubiquity, regional cloud ecosystems, sustainability and carbon-intelligent cloud, and automated programmable infrastructure from cloud infrastructure and platform service (CIPS) providers. Public cloud companies also have a special opportunity to make investments in sustainability tools, such relocating cloud data centres to be physically close to renewable energy sources. Cloud service providers will face increased pressure over the next three years to have a transparent climate plan and a well-defined roadmap. In order to assess the need, obstacles, and trends of green computing, this study looks into the dynamics of green computing services and does a literature review. The paper makes the claim that green energy is firmly established in the future of IT by examining the traits, obstacles, and trends. According to the study's findings, cloud computing can be very effective at maximizing green computing's advantages while minimizing its negative environmental effects, leading to sustainable development in organizations.

Keywords: Green computing, Sustainable technologies, Cloud service providers

1. Introduction: As a result of globalization, numerous social issues have been resolved and new opportunities have emerged as a result of economic expansion. In a matter of seconds, social issues are reported and new businesses are established. However, these advancements have negative effects. The main results of globalization can be demonstrated to be on the normal climate. Several decades ago, environmental issues were only thought of as potential issues for the future; today, however, they are recognized as current issues as governments attempt to take measures or investigate environmentally friendly technologies to stop the ongoing environmental disaster.

Globalization's driving force was the development of the Internet and the World Wide Web. These two technologies were successful in creating new pathways for scientific research and knowledge and transforming the entire planet into a digital village. However, digital technologies also had negative effects. The Earth's carbon footprint has grown as a result of the daily use of millions of personal computers and the upkeep of a large number of computer servers. New technologies like green computing give us hope that computing power can be used in a way that doesn't harm the environment.

Certain traits can be found in the developing field of green cloud computing. These qualities include virtualization, consolidation, multi-tenancy, energy efficiency, and environmental friendliness. Virtualization and multi-tenancy are two of these traits that are crucial but aren't yet covered in this work. The idea of virtualization is using the same abstraction process across several virtual computers. This would fall under the umbrella of green cloud computing and

entail the use of several computers to perform shared activities, which would ultimately result in a decrease in energy usage per computer and an increase in efficiency.

Similar to this, multi-tenancy refers to a phenomena where cloud services are made available to numerous tenants of the same category in order to avoid additional or minimal investment and energy being used by a single tenant. Although there are a number of advantages to this technology, particularly those related to energy efficiency, there is an immediate risk to the renters' privacy. Therefore, there is opportunity for the multi-tenancy features of Green Cloud Computing to expand further. Consolidation, which Patil and Patil [6] define as "the process of deploying different data centers related data processing applications on a single server with virtualization technology," is the final characteristic shown in the workflow diagram. In general, it refers to the process of implementing Green Cloud Computing and making it compatible with environmental sustainability. These procedures mostly have to do with the Application, Network, and Security upon which cloud computing logic is based.

2. Need of Green computing As Green Technology:

Given the transition of analog business models into digital environments, the demand for cloud computing would increase in the future. As a result, the worldwide emissions from the IT industry would also increase, which would be harmful to the environment's security and health. Additionally, as a result of this, the IT sector may start to rank among the major emitters of carbon dioxide. Therefore, it should be clear that for the IT industry to grow in the future, it must be made more environmentally friendly and sustainable. Therefore, the demand for Green Cloud Computing is crucial for the sector. Since data centers are among the energy-intensive components of IT solutions, it is impossible to create an IT sustainability solution without including creating a sustainable solution for these data centers. The study also emphasizes the significance of energy efficiency and power management in existing data centers. There are several obstacles to the development of green cloud computing, though, and these are covered in the section that follows.

3. Challenges in the Use of Green computing As Green Technology:

Utilizing green green computing comes with a number of difficulties. The main obstacle is reducing energy consumption while meeting service quality standards. Anyway there are various issues while distributed computing is considered for natural applications:

Energy-mindful powerful asset distribution: In distributed computing, the exorbitant power cycling of servers could adversely affect their dependability. In addition, in the dynamic cloud environment, any power outage can have an impact on the service's quality.

Additionally, a virtual machine (VM) cannot precisely record a physical machine's timing behavior. A service-level agreement (SLA) may not be properly enforced as a result of problems with timekeeping and inaccurate time measurements within the VM

- Resource provisioning based on quality of service determination assumes a critical part in distributed computing. Better asset choice and arrangement can bring about energy effectiveness .
- Topology optimization for virtual networks: Due to VM relocations or the machines' nonoptimized assignment, imparting VMs may at last be facilitated on far off actual hubs, and subsequently, the expense of information move between them might be high.
- Increasing environmental awareness: Green green computing technology users ought to become aware of how the technology can be used to solve specific environmental issues, like lowering carbon emissions.
- SLAs: One application can be replicated across multiple servers with these. Customers of the cloud should compare the various parameters of SLAs offered by various cloud vendors, such as

data protection, outage, and pricing .

- Managing data in the cloud: The accumulation of large amounts of data is a feature of cloud operation. For complete data security, cloud service providers rely on cloud infrastructure providers. VMs can also be moved from one location to another; As a result, it may not be enough for service providers to configure the cloud remotely.

3. Cloud Sustainability and computability:

A sociotechnical conceptualization for sustainable distributed computing can be provided by green computing when it is combined with particular characteristics of other technologies, such as the distributed provision of resources in grid computing, the distributed control of digital ecosystems, and the sustainability of green computing. According to Foster and Kesselman (2004), grid computing is a type of distributed technology in which a cluster of networked computers performs very large tasks on a virtual supercomputer. Computerized environments are sociotechnical frameworks described by self-association, adaptability, and maintainability. According to Newcomer and Lomow (2005), their goal is to support network-based economies by expanding service-oriented architecture (SOA).

The efficient use of computing resources in accordance with particular values for the success of organizations and societies is known as "green computing." People, the environment, and profit are these values. Social, monetary, and natural supportability can likewise be accomplished through the improvement of a green foundation characterize green foundation as the overflow of scene includes that in blend with environmental cycles adds to human wellbeing, choose a green infrastructure framework (GIF) with the following five roles: biological system administrations, biodiversity, social and regional attachment, feasible turn of events, and human prosperity. In order to guarantee long-term viability, a number of green computing business models have been developed.

The cloud cube model, which lets people work together in cloud formations used for specific business needs, and the hexagon model, which shows how green computing performs in accordance with six main criteria for business sustainability (consumers, investors, popularity, valuation, innovation, and get the job done. Through business improvement, transformation, and the creation of new business value chains, the cloud can help businesses stay in business.

Sustainable Green computing The supply chain is managed by 99 focal companies; They provide customers with direct communication. In addition, they design the offered product or service. Central organizations are too answerable for the natural and social exhibition of their providers; As a result, sustainable supply chain management is more important than ever . Customers, focal companies, and suppliers all have a direct connection. Green supply chain management is achieved when environmental considerations are incorporated into the management of the supply chain. Sustainable information services can be provided throughout the supply chain with the help of sustainable information systems in this instance. Research on green data frameworks can be ordered to various classes. According to Haigh and Griffiths (2008), the first category focuses on figuring out how the software development life cycle can be altered to lessen the system's potential negative effects on the environment. The application of knowledge management for environmental sustainability and environmental reporting, measurement, and accounting systems are the subject of the second. The consideration of environmental parameters when designing new products is also the subject of some research studies. A green information system that offers green information services is a green computing platform.

The specific technology enables small business organizations to access large amounts of computing power in a very short amount of time, demonstrating the sustainability of green

computing; They become more competitive with larger businesses as a result. Because they are able to use IT services that they were previously unable to access due to a lack of resources, third-world nations can also greatly benefit from green computing technologies. Distributed computing speeds up the time in the organizations market since it permits speedier access to equipment assets with no direct venture. Operational expenditure (opex) takes the place of capital expenditure (capex) in this instance. Distributed computing makes conceivable the acknowledgment of new, creative applications like ongoing, area , climate , and setting mindful portable intelligent applications; parallel batch processing, which is used to process a lot of data in a short amount of time; and customer behavior analysis using business analytics.

4. Technologies related to sustainable green computing:

The following technologies are related to or share characteristics with green computing:

- Lattice processing: A large computer network is used to create large supercomputing resources in this scenario. It is possible to carry out extensive and intricate computing operations in these kinds of networks.
- Vulneering: Multiple applications can be consolidated into virtual containers on a single server or multiple servers with virtualization (Padala et al., 2007). Green computing is built on virtualization. It empowers clients to get to servers without knowing subtleties of those servers.
- Calculating utility: A "pay-per-use" model for utilizing computing services is outlined by this term.
- Computing autonomously: In this instance, computer self-management is referred to as autonomic. Computers can correct themselves in autonomic computing without human intervention.
- Internet services: Utilizing a methodical framework based on existing Web protocols and open XML standards, web services make application-to-application interaction simpler. There are three main components in this framework: service descriptions, communication protocols, and service discovery

5. Future aspects of sustainable cloud:

In terms of its impact on sustainability, the future of green computing is excellent. There is gigantic potential for extra uses of the innovation to various businesses, for example, fabricating, medical care, and instruction. The provision of massive and adaptable computing power for drug discovery, the realization of low-cost simulation Sustainable Green computing 105 experiments, and the provision of access to global data resources through green computing are all examples of this potential. Green computing can also significantly improve manufacturing processes and supply chain coordination by facilitating rapid prototyping and collaborative design. In addition, the technology has the potential to serve as the foundation for highly collaborative, interactive learning. The global cloud ecosystem is envisioned by the European Union (EU). It may provide new features to encourage green computing adoption and support cloud employment. New programming models and tools for distribution and control, improved security and data protection, effective data management, energy efficiency, and straightforward mash-ups of clouds revealing a single-user interface could be provided as supporting tools. The EU can also improve the capabilities of European industry's products and services by utilizing the capabilities of existing cloud systems (European Commission, 2014). Non-industrial nations, like India, can look for ways of upgrading supportability using green IT. In fact, in 2013, India spent 18.2 billion dollars on green IT. According to a joint research project conducted by Microsoft and the Global e-Sustainability Initiative (Global e-Sustainability

Initiative), the efficiency of cloud-based services can be up to 95% higher than that of traditional methods (Thomond, 2013).

6. Conclusion:

The cutting-edge technology of green computing has a significant impact on numerous industries. The late director of the Massachusetts Institute of Technology Laboratory of Computer Science, Michael Dertouzos, had the idea to make computing as essential to human life as oxygen. As a result, he started Project Oxygen to advance human-centered, ubiquitous computing. Distributed computing is the best illustration of such advances. By reducing hardware dependence, it has revolutionized the way services are offered on the World Wide Web. Most importantly, applications can run on their own regardless of the configuration of a computer. Distributed computing is a huge variable for accomplishing maintainability. It encourages academic research, business growth, and increased competition between businesses. Administrative organizations have begun coordinating the innovation in their current framework, what's more, virtual entertainment have acquired far reaching acknowledgment. Green computing has the potential to have a significant impact on the environment in the future. Applications, for example, the acknowledgment of crisis reaction frameworks during catastrophic events and the early location of natural debacles can be proficiently acknowledged using distributed computing. Social networking can also be used to build teams that educate people about the environment or provide information that can help in times of crisis. However, additional research is required in the future to fully comprehend the energy efficiency offered by this particular technology.

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Supervisory Mechanism to Propel Corporate Governance in Retail Banking to curb misleading Service Practices

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Abstract

In the wake of increasing scandals and complexity of products and procedures, corporate governance practice has received heightened attention. Shareholders, investors, creditors, regulators and academicians are looking deep down to check the reason of the failure to prevent the mal practices and leading changes in governance structure to enhance accountability and efficiency. With so many reforms, regulatory bodies, act's, compliance mechanism how is it possible to have so many fraudulent activities which can be seen in banking? Both insiders and outsiders are part of these frauds and scams, and how these can be curb? Primary data has been collected from 30 bank officials. Finding shows that various rules, regulation, compliance mechanism, reporting systems has been developed to make a fool proof system, but still frauds are committed by bankers to dupe the customer for their (employees) personal benefit. In the wake of all this the major finding which is propounded is the inefficient role/mechanism of supervision by supervisor/ authorities/ managers on their subordinates/bank branches.

Key words- Misleading services, corporate governance, supervision, banking, frauds, scams

1. Introduction

Banking sector can be termed as economic blood of a country, India banking is going through transition phase due to that lots of new and amended regulations are imposed by different authorities. Due to this daily basis amendments in banking sector, it became difficult for the regulators as well as for the bankers to be on the right track in compliance. Secondly in India there are various authorities which manage the different products of the bank like Fixed deposit and other banking products are regulated by RBI (Reserve Bank of India), Small saving products (which are meant for economically weaker section of society) by GOI (Government of India), insurance by IRDA (Insurance Regulatory and development authority), Mutual funds by SEBI (Securities and exchange board of India), New pension schemes by PFRDA (Pension fund Regulatory and development authority) etc.

Daily basis amendments and different regulations of different authorities provide an opportunity to the insiders and outsiders to overlook the rules and indulge in mal practices, which can hamper the society as a whole. Banking institutions are established for the development of the society and none of the business can survive without the support of society, hence it becomes mandatory to be more transparent, fair, simple, justified while dealing with the stakeholders in the respective banking areas.

Governance refers to the process of fundamental leadership and execution, which includes several actions. A great administration is always competent, accountable, fair, successful, and productive (Caprio et al., 2003). It is also transparent, participatory, and upholds the law. We believe that good management is essential in all aspect of life, so we all need excellent management in our homes, workplaces, businesses, and so forth. If we take a close look at the

people who make up our society, we could notice that without rules and regulations it is not possible to control activities, we also need to notice how people behave and protect their rights and liberties, society might fragment and fall apart. If there are no principles and rules, it could start to rebel.

Due to business failures, lack of transparency and the discontentment of the stakeholders leads the utmost requirement of fair, equal, just and transparent banking facilities, the need for corporate governance has evolved (Farrar, 1998). One of the in-depth debates during the various globe crisis says that fair business practices largely depends upon complete openness, honesty, and responsibility of the management and employees. Additionally, there is a growing emphasis on both the public interest and investor protection (Kumar, 2018). The principle of vision and visibility is applicable when it comes to governance of the banking organisations. Customers, employees and other stakeholder's are also keen to know the organization's value orientation (Mittal et al., 2019). Organization's moral principles guide its actions, the direction of the group's advancement, social accomplishments and practises that promote performance transparency.

A supervisor who practises good corporate governance may be able to rely more on the internal procedures of the bank. In this regard, supervisory experience highlights how crucial it is for any bank to have the proper levels of power, responsibility, accountability, checks and balances, including board of directors, senior management, risk compliance and internal audit functions.

The notion of corporate governance emerged in response to corporate failures and general discontent with the way many corporations operate. This concept has since become the subject of extensive and in-depth discussions across a variety of business sectors on a global scale (Mittal & Garg, 2019). Emphasis is placed on comprehensive transparency in the foundational principles of corporate governance. Transparency, morality, and managerial responsibility are the pillars for implementing corporate governance from top to bottom in the organisation. Additionally, there is a rising need for investors' participation in the management so that adequate transparency can be maintained (Mittal et al., 2019). Interests and attitude toward the public should be of mutual benefit rather than taking advantage of societal resources. With the values, direction, and visibility, it is easy to implement corporate governance. All of it discusses the firm's value orientation, performance, ethical standards, development trends, societal success of the organisation and the prominence of its supervisory mechanism because there are so many diverse ideas and methods of corporate governance (Kumar, 2018). Academics and practitioners have developed a range of definitions that fundamentally reflect their own perspectives. In this paper various mal practices are discussed which are followed by the banks but these are not discussed much, due to privacy or internal matter or loss of goodwill of the organisation/bank. In this paper survey has been done with the top official of bank branch so that effective mechanism can be developed to curb these kind of practice.

2. Literature Review

Effective corporate governance is essential to the economy's overall health as well as the health of the banking industry. By transferring money from savers and depositors to those activities that support business and promote economic growth, banks play a significant role in the economy. Financial stability depends on banks' safety and soundness, and the way they operate is crucial to the health of the economy. Governance issues at banks that have a big impact on the financial system can spread issues throughout the banking industry and the economy as a whole (Caprio et al., 2003).

According to Firoz M. (2010)'s research, organisations are continually expected to increase the level of financial disclosure from the current framework for effective corporate governance which includes acknowledging and estimating budgets, expenses, resources, and liabilities so that accountability can be fixed. In their analysis, Alao O. and Raimi, L. (2011) noted that the role of corporate administration practise in the event of a global financial crisis is to ensure investors interest, also successfully protect the customers' enthusiasm in the event of downturn wave, which generally have huge inverse effect on economies. David Millon (2011) explains in his analysis that since a very long time, a company's ability to survive and thrive depends on the wealth of its various partners and investors. Maintainability is also necessary for the current availability of shared resources in which the company can endure and flourish. Greater corporate management leads to better organisational execution (Gupta, P, 2012). In his investigation, he also discovered that corporate management has a significant impact on the companies' financial performance and offer costs like proposition and financial operations of the organisations.

Due to lax legal protection, inadequate transparency requirements, and dominating owners, the development of effective corporate governance norms in banks has been partially stymied in emerging nations like India (Arun and Turner, 2002a). Furthermore, because it serves the interests of certain parties, the private banking industry deliberately chooses to disregard some corporate governance ethics (Banaji and Mody, 2001). According to Macey and O'Hara's 2003 argument, depositors and stockholders should both be considered when determining how to govern banking organisations. Second, because one of the unique characteristics of banks that calls for different handling of its corporate governance is that they operate with greater transparency and with customer's money (Levine, 2003). Banks can easily mask issues by offering loans to customers who are unable to pay off previous debt. Depositors are unaware of the true worth of the bank's loan portfolio because the information is confidential (Bhattacharyya and Rao, 2004). These incidents highlight the enormous challenges that traditional corporate governance procedures face in gathering knowledge about bank activity and keeping track of continuing bank actions. Third, the capital structure of banks is distinct due to its mix of liabilities and equity. According to Berger, Herring, and Szego (1995), banks have the highest level of leverage when compared to other businesses in any industry.

There are significant data about how crucial corporate governance is for banking companies. Governance tools, in the opinion of Caprio, Leuven, and Levine (2003), would be able to lessen the expropriation of bank resources and foster bank efficiency. Theft, transfer pricing, asset stripping, hiring of relatives, and credit allocation are all examples of expropriations that harm the bank and profit bank insiders. The concept of efficiency can be regarded in terms of the flow of capital in the form of loan or equity to the businesses that provide goods and services in the most effective way with the best rate of return. In reality, banking institutions have improved the performance of businesses (Eldomiaty and Choi, 2003). Also it leads the development of effective corporate practises in a developing country like India.

According to Chirinko, van Ees, Garrestsen, and Sterken (1999), a bank can play a governance function when businesses rely on financing from financial institutions by keeping an eye on their operations, requesting audits, and levying fines. As a result, good bank governance improves the possibility that the bank will also exercise good governance over the businesses it finances. The nature of the banking industry itself accounts for a substantial portion of the corporate governance processes in that sector.

The idea that banks are unique relative to non-banking institutions holds true in theory, practise, and supervision. This is the fundamental reason why banking should specifically regulated and

closely supervised. These characteristics make them unique. In previous researches mostly aspects of NPA (Non-performing assets), efficient board of directors, bank failure, issuance of loan to defaulters, insider trading, recruitment of relatives etc. has been discussed, but none of the research has discussed about the kind of services which are provided to the customer on daily basis and how bankers are able to provide inefficient (lower than desired services) services and able to sell unsuitable financial products (not required/ not suitable to customer's need) to customers? Where banks are lacking even after having so many rules, regulators, mechanism etc.?

3. Problem Statement

Various studies has emphasised on the corporate governance but on some particular areas like (a) Board of directors activities, (b) ensuring accountability standards by the senior management, (c) Protection of the corporation's assets d) Interests of shareholders (Shleifer and Vishny, 1997; Daily and Dalton (1993; Farrar, 1998), and their effect on society as a whole (Sullivan, 1998; Dalton and others, 2003). One can comprehend the intricate magnitude, of the composition of board of director, companies philosophy and disclosure norms but none of the study has focused on customer service practices, this study it is not directly related to the bank service quality model rather it emphasize on the type of commitment made by bankers to their customers related to their financial assets at the time of their account opening.

By nature banks are treated as a mediator for accepting the individual's deposit and lending the same to the individuals and corporate to earn a decent return for the functioning of bank itself, to maintain the faith of the investors in the bank, to fulfil the regulatory requirements, to attract more customers, to generate employment and for economic development.

Financial institution's one wrong decision for the allocation of the fund can have a drastic effect on all of the above prospective. Sometimes it leads to the collapse of the leading banks like Lehman brothers in 2008-2009.

To escape from this kind of situation it is necessary to address the following issues, as following practices are prevailing in the banks, which hamper the customer's financial position, effort, time and mental peace.

4. Objective of the Study

To identify the practices in retail banking which are profit driven and did not aim mutual benefit or for the fulfilling customer requirement with in prescribed formalities/framework and not as per banking rules and regulations. In terms of service private banks are counted first but on the basis of reliability public banks are still ahead. Now-a-days service objective of the banks are not emphasise on the service of the customer or the society instead management believe in wealth maximisation of the shareholders and investors. To achieve this objective and to match the yearly targets of income, sometimes bank employees deals in such practice which seems correct and justified but later on their effects have to be borne by the customers or investors in the banking products in the form of financial loss. To provide benefit to bank's shareholder or investor, bank customer have to suffer losses (as those products are sold to customer which are not suitable as per their requirement, but customers have already invested in bank products are bank has taken its fee, commission or interest income, now its customer who suffer losses, on the other hand bank employees get their incentives, shareholders get wealth maximisation but customer's wealth get erode.)

5. Research Methodology

Primary data has been collected from 30 bank officials (Particularly from top executive of retail branch banking) about what kind of practices are adopted by bank officials to show the position of the banks working as sound, efficient, just and transparent. Various banking related commitment and aspects has been discussed with the respondents but only those statements which are majorly accepted by more than and equal to 50% of the officials are reported in this paper.

6. Issues which can be addressed by close supervision can lead Good Corporate governance

Corporate governance is not only limited to the board of directors, transparency in financial statements, disclosure, public dealing but the effective and close supervision related to day to day working can enhance the return for the investors, can enhance the customer's confidence in banking, trust of general public etc. All these things can lead a better profitability and reputation of the banking organisation in the market. In this research paper role of supervision has been discussed among various practices where the banks are lacking and drastic improvement is required in this front. A close monitoring can safeguard the bank and its customers from tentative loss in the future. Today's holistic supervision activities can lead a beneficial future.

6.1 Non Performing Asset Syndrome

In 2021 Public sector banks reported 6166.16 Billion Indian Rupees NPA, followed by 2001.41 bn/INR by private banks, 150.44 bn/INR by foreign banks, and 59.71 bn/INR by small banks. Total amount was more than 6 trillion Indian Rupees (Statistics research department, 2021). Sometimes Loans are granted to the customers on the basis of bribe, favouritism, nepotism, inadequate KYC documents and inadequate disclosure by the borrowers etc. All these things can have a huge impact on the profitability of the banks, hence adequate transparency is required while allocating the depositors fund.

Loans become non-performing assets (NPAs) as a result of poor governance and policy gridlock, which slow down the timetable and pace of projects. The Infrastructure Sector, is an example. NPAs are the outcome of unintended corporate house expansion during the boom period and loans that were first accepted at low rates but later serviced at high rates. Severe rivalry in any given commercial sector can lead NPA. Take the Indian telecom industry as an example. Land acquisition is being delayed because of social, political, cultural, and environmental factors and loans become bad after sometime due to increase in price of land.

6.2 Fraud Management

As per Reserve Bank of India in 2021 total 1.3 trillion Indian rupees were gone in fraud. Recent bank frauds have shown that in many cases bank staff themselves were involved for making easy money, rather than hiding these kind of incidents from police and authorities for the sake of bank's reputation, its required to penalise the concerned staff and set an example for the other bankers so that they do not dare to engage in such practices. Various kind of frauds related to account opening, some new accounts are particularly opened for the purpose of depositing and cashing unauthorised or fraudulent cheque. Sometimes cheques are also used to get loan from bank and then it was not repaid by the customer. Accounts are opened and loans are disbursed on the basis of fake documents. Counterfeit currency is deposited in bank accounts. In the fight against shady transactions, tax evasion, and money-laundering schemes, the financial institutions play a crucial signalling role.

6.3 Incentive Structure only for sales not service

Huge performance based incentives are paid to the bank staff, even their yearly bonus and increment is also depends upon the number of insurance policies or number of accounts opened by them. Sometimes it leads to mis-selling to earn the maximum incentives. Rather than this it is required to introduce service based incentives, so that banks can concentrate of fair and equitable treatment of the customers. Sometimes products are sold to the customer without their requirement or products are which are not suitable for their requirement.

6.4 Non-selling of Basic Banking Products

While selling Basic banking products like various kind of deposit accounts, it is necessary to disclosure all the hidden charges and related terms and conditions so that customer can take a rational decision that a particular kind of account suits his/her specified need or not.

-As in banking there is no defined or specified documented sales procedure.

-No mechanism to ascertain that the customer was informed or not at the time of account opening about charges, terms and conditions.

-Can not ascertain that what kind of promise which are made by sales executive at the time of selling.

- No emphasize is given to sell or open the account of disadvantaged section or no frills account. As these are zero balance account where bank did not get any profit, in fact they have to serve non-profitable customers. Hence sales executives are not targeted to open these kind of accounts and mandatory government regulations are over-ruled.

Whenever there is a complaint from customer, they are not able to prove their point that fake commitments are made by the sales executive and the customer trust is breached.

6.5 Delay in processing customer request

Sometimes customer's requests are processed with delay but customer is not informed about the same, and when customer probe the banker about the delay something different is conveyed to them rather than telling the exact reason, even supervisors are least interested to know the reason of the delay and in last these kind of delays become Banking Ombudsman complaint which spoils the reputation of the bank.

6.6 False commitment while selling Para banking products

Para banking products include Mutual funds, Life and General Insurance, gold coins etc. All these products attract handsome revenue for the banks. Hence bank staff have to bear heavy pressure from the management and supervisors for the maximum sale of these products, sometimes eagerness to earn maximum incentive induced bankers to indulge in misspelling activities. Initially this bad sales derive profitability for the bank but after wards turns into complaints. Sometimes customer have to bear huge losses due to this kind of deals.

6.7 Non-Fulfilment of Statutory requirements

To prevent the AML (Anti Money laundering) activities it is necessary to keep an eye on the nature and pattern of the customer transactions, but because of fear of losing customer and business derived from these customer, bank staff does not do the STR (Suspicious transaction reporting) and CCY (Counterfeit Currency Reporting) reporting. STR and CCY reporting are statutory requirement. Concealing these kind of activities can lead terrorist funding, tax evasion, black money, Hawala funding etc. As a responsible citizen and banker it is duty of the officer to disclose these kind of transaction rather than lure by momentary profit.

6.8 False picture of financial health

Sometimes companies shows extra ordinary profits and growth of the firm to mislead the investor and to retain them in the organisation. Satyam and Global trust bank scandal are classic

examples of these kinds of practices, where a higher profit is shown in books to maintain the trust of the customer or market in the organisation. But this kind of activity cannot be concealed in long run and then organisation have to face the consequences. It's not only the perspective of the organisation, it's the customers or the shareholders who have to bear the losses in the form of decline in share capital.

6.9 Transparency in allocation of investors' funds

Most of the time when customer invest in Insurance products false commitments are made about the allocation of funds, risk factor is concealed from them, and they are not able to take a rational decision about their investment. Hence transparency is required to make a wise decision. Often, it has been seen that customer invest in long term insurance product on the suggestion of the bank officials that these are not insurance but it's a long term fixed deposit, they can withdraw their funds after expiry of certain period. But in actual insurance is sold in the name of fixed deposit.

7. Analysis & interpretation

30 bank official are interviewed, majorly from sales force including branch sales managers (manager level) and area sales managers (senior manager level). Various multiple choice questions are asked from them about the negative banking practices and their impact on bank and customers.

Table-1-Primary Data based analysis

Descriptive	Yes %	No %	Relevance
Do you think that tight supervision can effectively reduce Non-performing Assets in banks?	90%	10%	It decrease the profitability of the banks along with credibility of the banking system. Customer also loss credit worthiness and reputation.
Do you think that tight supervision can effectively reduce frauds/scams in banks?	75%	25%	Can lose the customer and profitability can be decreased along with reputational issues. No doubt, customer suffers in case of fraud.
Do you think that tight supervision and service based incentive can improve customer service in banks?	73.6%	26.4%	Incentives are good to motivate the sales team, but it should not induce to get the sales done by unfair means or without knowing the requirement of the customer or by making false promise. Customer suffers in this.
Do you think that tight supervision can effectively promote the sale of small banking products which are meant for economic weaker section of the society in banks?	83.3%	16.7%	When bankers are not getting any incentive or get target for selling small banking products, sales force did not sell these products. It will a loss for bank and not the employee. But disadvantaged section suffer in this case, they are not able to get access of financial services which are promoted by govt.
Do you think that tight supervision can effectively reduce the time for processing customer request or transaction in banks?	93.3%	6.7%	Bank will start losing their customer with the fast service providing banks. It will reduce the client base of the bank, their deposit and advance base. But with a close monitoring and supervision

			this kind of practices can be reduced.
Do you think that tight supervision can effectively reduce mis-selling or force selling of insurance, gold coin, mutual fund schemes, bank account etc. in banks?	86.6%	13.4%	It erode the confidence of customer in banking system, it also attracts penalty on banks and creates reputational issues. Para banking products are majorly deals in insurance products, where high rate of interest is promised with the customer. But here bankers is also not aware about how the market will move then this kind of promise leads reputational issues for employees, sometimes they have to lose their job and penalty is levied on them.
Do you think that tight supervision can effectively promote the bank staff to properly report about counterfeit currency and suspicious transactions of bank customers?	90%	10%	Here we are studying the counterfeit currency (CCR) reporting and suspicious transaction reporting (STR), but these kind of reporting is done seldom to protect the customer and keep the profitable customer in the bank only. Again a close monitoring system can reduce this kind of practices.
Do you think that tight supervision can effectively reduce the usage of fake documents, false financial health of banks and individuals?	83.3%	16.7%	Sometimes to lure the customers, false picture of financial position of bank and investment options are presented in front of customer. Initially customer lured and provide fund but customer cannot be fooled in long run and decrease the profitability of banks. A tight monitoring norms can lead ethical business practices.
Do you think that tight supervision can provide an effective and transparent mechanism for allocation of investor's fund?	70%	30%	Generally customers are not aware about the allocation of their invested funds and due to perception of losing money they invest very little amount. More transparency will enhance the customer trust and it will the increase the investment base of the banking system and profitability.

Table- 2- Secondary Data based analysis

Descriptive	Year	Year	Reason
NPA Syndrome	6.17 Trillion Indian Rs. In 2021	6.78 Trillion Indian Rs. In 2020	Both Insider and outsider involve in these kind of practices, sometimes loan are granted without proper due diligence, sometime customer financial position is willing ignored, sometimes official shirking work attitude can create this kind of error. Strong supervision mechanism can control and reduce this kind of bad loans.
Fraud in banks	1.3 Trillion Indian Rs.in 2020	604 billion INR (Till july 2021)	Both Insider and outsider involved in these kind of frauds, robust technology and effective supervision mechanism is required to maintain to avoid frauds.
Failure to meet commitment	35,999 complaints on Banking Ombudsman (BO) in 2019-20	25,036 complaints on Banking Ombudsman in 2020-21	Monitoring authorities can make standard rules and set of procedures but all these things are beneficial only if banking activities are monitored closely and strong mechanism will be developed to penalise the culprit or staff involved in mis-sell or concealment of facts.
Non-fulfilment of fair practice code	33,898 BO complaints in 2019-20	36,215 BO complaints in 2020-21	
Pension payment related issues	4,966 BO complaints in 2019-20	6,307 BO complaints in 2020-21	
False commitment while selling Para banking products	1,236 BO complaints in 2019-20	1,117 BO complaints in 2020-21	
Non Adherence of customer service code	14,490 BO complaints in 2019-20	14,194 BO complaints in 2020-21	
False commitment in loans and advances	20,218 BO complaints in 2019-20	16,437 BO complaints in 2020-21	
Allotment of credit card without proper disclosure	40,721 BO complaints in 2019-20	28,713 BO complaints in 2020-21	

Frauds/scams/misleading practices can have a significant impact on organisations like banks and have a high economic cost in terms of potential disruption, loss of faith in the banking system, and potential harm to the integrity and stability of the economy. Monitoring authorities can make standard rules and set of procedures but all these things are beneficial only if banking activities are monitored closely and strong mechanism will be developed to penalise the culprit or staff involved in mis-sell or concealment of facts.

8. CONCLUSION

Corporate governance is the key for the long term growth and sustainable development. Without the well being of the all the stakeholders it is impossible for any organisation to survive. In the long its customer who will decide the fate of any service firm specially banks where they put their trust and hard earned money. Today's customer is lot more aware and in long term they only go with that institution that will fulfil their need in a profitable manner along with transparency and customer awareness, where the customer can take decision without any pressure from the sales staff.

In the case of public sector banks, primarily, poor performance by the banks results in poor shareholder returns, which reduces the amount of dividends paid to the Indian government. As a result, it might affect the quick distribution of funds for infrastructure and social development, which would have social and political costs. Secondly, poor services to customer has propounded an unsatisfactory environment. Due to poor services customers have to move private sector banks, but there also they have to face the problem of fake commitments, high charges, mis-selling, un-wanted calls etc. sometimes this kind of activities leads or seems that it was done with mal-intention and increase the customer grievances and banking ombudsman complaints.

Frauds can have a significant impact on organisations like banks and have a high economic cost in terms of potential disruption, loss of faith in the banking system, and potential harm to the integrity and stability of the economy. It has the potential to bring down banks, damage the central bank's supervision function, and possibly spark societal unrest, political upheavals, and other negative outcomes. Recent technological developments have increased banks' susceptibility to fraud. Bank audit programmes haven't been successful at spotting fraud instances. Providing people with a way to report suspicious activity is an essential component of a fraud prevention strategy.

The efficiency of these agencies in carrying out their various responsibilities can be greatly enhanced by cooperation and appropriate information exchange among relevant public authorities, including bank supervisors and conduct authorities. When supervisors and other authorities communicate effectively, supervisors can make better assessments of a bank's overall governance and the dangers it faces, especially in a group setting. They can also assist other authorities in determining the risks posed to the larger financial system. Information exchanged should be pertinent for administrative needs and given within the bounds of confidentiality and other governing legal provisions.

Close supervision and monitoring is the only fundamental rule through which these kind of practices can be reduced to enhance the customer welfare, economic growth, Transparency, strengthen the organisational reputation and foster customer confidence in economic and political system as a whole. Not only this but close monitoring of transaction and customer awareness can reduce the frauds and various undesirable and unethical practices in the system.

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An Overview of Clean Energy Technologies for Sustainable Development

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Abstract

Clean energy is a critical component to sustainable development throughout the world. Clean energy technology not only improves our quality of life by reducing air and water pollution, but it also mitigates energy dependence by creating renewable resources in local communities. The need for clean energy technology has never been more important. The way we currently produce and consume energy is unsustainable, and while technology is not the only ingredient to a cleaner energy future, there is no credible path to net-zero emissions without a significant and speedy ramping up of clean energy technologies across the entire energy sector. The Paper primarily focuses on importance and latest trends and inventions on clean energy technologies.

Keyword: Clean Energy, Environment friendly, Renewable Energy, Sustainable development, Inventions

Introduction

Energy is at the core of the climate crisis and is key to find a solution.

When fossil fuels are used to produce energy, including electricity and heat, a significant portion of the greenhouse gases that cover the Earth and trap solar heat are produced. With over 75% of all greenhouse gas emissions and almost 90% of all carbon dioxide emissions coming from fossil fuels like coal, oil, and gas, they are by far the biggest cause of climate change in the world. The science is clear: by 2030, emissions must almost be cut in half and be net-zero by 2050 if the worst effects of climate change are to be avoided. To do this, we must stop relying on fossil fuels and start putting money into reliable, clean, accessible, and affordable alternative energy sources. Technology for renewable energy is more necessary than ever. While technology is not the only component of a cleaner energy future, the way we presently produce and consume energy is unsustainable. Without a major and quick ramp-up of clean energy technologies across the entire energy sector, there is no plausible road to net-zero emissions.

1. Clean Energy Technology

Any procedure, good, or service that significantly increases energy efficiency, makes use of resources sustainably, or engages in environmental protection is considered a form of clean energy technology. By increasing the availability of energy and addressing environmental issues brought on by the usage of other conventional energy sources, clean energy technologies also support economic growth. Clean energy—Technology enables the substitution of clean energy for energy derived from fossil fuels.

3. Clean Energy

Clean energy is produced by production processes that do not emit any pollutants, particularly greenhouse gases like CO₂ that contribute to global warming. In order to improve environmental protection and ease the crisis caused by non-renewable fuels like petrol and oil, clean energy, which is currently in full growth, is essential.

3.1 Differences between Clean and Renewable Energy Sources

The terms "clean energy" and "renewable energy" are often used interchangeably, but they are not the same thing, and it is crucial to recognise this. The pollution they produce is the first distinction. You might not be aware that clean energy sources can pollute.

For instance, biogas and biodiesel are renewable energy sources since they are produced from natural, non-depletable sources. However, they damage the atmosphere on combustion and release greenhouse gases, unlike the majority of renewable sources.

Since clean energies do not cause pollution, it is reasonable to conclude that most renewable energy sources are likewise clean, and vice versa.

3.2 Examples of Clean Energy Technology

Clean energy technologies are naturally renewable and provide less harmful solutions to power the entire world. Solar, wind, water, geothermal, bioenergy, natural gas, and nuclear power are a few of the most prevalent examples of clean energy sources.

3.2.1 Wind energy

It is created by converting the kinetic energy of the wind into electricity, making it a clean, renewable, local, and limitless source of energy. Depending on where the wind turbines are placed, there are two types:

- Onshore wind energy: this type of energy exploits air currents created on land.
- Offshore wind energy: It makes advantage of the wind that blows on the high seas, where it is more consistent and travels at faster speeds.

3.2.2 Solar Energy

Solar energy that uses photovoltaic conversion to create electricity from sunlight is clean, renewable, local, and unrennewable.

3.2.3 Hydroelectric Energy

Hydroelectric power employs the force of water falling from a height or flowing down a slope to produce electricity. It is a clean, renewable, emission-free, local source of energy. The most effective, extensive form of energy storage now used is hydroelectric pumping stations, which are a subset of this sort of power generation.

3.2.4 Energy from Green Hydrogen

The generation of green hydrogen is the chemical process known as electrolysis, which produces hydrogen, a fuel that is universal, light, and highly reactive. If the power used in this process, which employs an electric current to separate the hydrogen from the oxygen in water, comes from renewable sources, we can produce energy without adding carbon dioxide to the atmosphere.

3.2.5 Energy from Biomass

It is a clean, sustainable energy source that generates power by burning organic waste made by humans or by burning naturally occurring organic material.

3.2.6 Geothermal Energy

It is a form of energy that uses power stations situated atop deposits to harvest the heat that the Earth's core radiates. It is clean, renewable, and endless. These can be dry deposits that get their heat from rocks, or they can be hot water deposits where the heat originates from layers of hot water flowing beneath the surface.

3.2.7 Tidal Energy

It uses the energy of the waves to generate electricity in a sustainable, local, and limitless manner.

Other forms of renewable energy include solar thermal energy, which harnesses the heat from the sun, wave energy, which transforms the power of the ocean's thermal gradient between cooler deep saltwater and warmer shallow or surface water, and ocean thermal energy conversion. In addition to these, a growing number of hybrid energy projects are appearing that combine several renewable energy sources to guarantee a more reliable, effective supply.

3.2.8 Nuclear energy

Contrary to popular belief, nuclear energy is clean during the whole production process and is almost endless when using the present uranium reserves, which will be able to continue producing the same amount of energy for thousands of years.

The majority of nuclear reactors actually just release water vapour into the atmosphere. No harmful gas that exacerbates climate change, including CO₂, methane, or any other sort, is considered in the calculation. Furthermore, we must not overlook the vast amount of energy that a single power plant is capable of producing due to the enormous power stored in nuclear energy. Nuclear fusion and fission are the two processes used to produce this energy. In the first of these, energy is released when atoms fuse or join to form a single, bigger nucleus. The second involves the splitting of the nuclei into smaller ones, which results in the release of energy.

3.3 Advantages of Clean Energy

There are many different sorts of renewable energy, as you can see, but what do they all share?

- They are environmentally beneficial because they don't release any greenhouse gases or other air pollutants.
- They are limitless because we get them from naturally replenishing resources that are either endless or regenerate quickly.
- They are riskfree because they don't include additional dangers like nuclear energy and are easy to disassemble, so there are no waste management difficulties when the facility's useful life is up.
- They support energy independence because they make use of globally accessible natural resources, enabling nations and regions to build their own technology rather than relying on electricity supplied elsewhere.
- The majority of renewable energy installations require a lot of labour to build, maintain, and operate, which provides jobs and supports the local economy.

3.4 The Importance of Clean Energy Technology in Sustainable Development

The use of clean energy is essential for global sustainable development. By lowering air and water pollution, clean energy technology not only enhances our quality of life but also lessens energy reliance by generating renewable resources in local communities.

3.4.1 Role of Renewable Energy Technologies in Sustainable Development

Technologies utilising renewable energy significantly contribute to sustainable development by lowering greenhouse gas emissions, enhancing energy security, and giving previously electricity-deprived regions access to the grid. For instance, electricity produced by renewable energy sources creates 70 to 90% less pollutants and emits 90 to 99% fewer greenhouse gases (GHGs) than electricity from coal-fired power plants.

Additionally, these technologies foster economic growth and employment creation, both of which are crucial for sustainable development. Some of the most significant ways that renewable energy technologies support sustainable development is listed below.:

- I. **Cutting down on Greenhouse Gas Emissions:** Using renewable energy sources can cut down on greenhouse gas emissions and help lessen the consequences of climate change. We can lessen our reliance on fossil fuels and the number of dangerous pollutants like carbon dioxide that are released into the atmosphere by turning to clean, renewable energy sources like solar and wind power.
- II. **Increasing Energy Security** By lowering reliance on foreign fuels and boosting the dependability of the energy supply, renewable energy technologies can promote energy security. Countries can lessen their reliance on imported energy sources and increase their level of independence by depending on locally accessible resources like wind and solar energy.
- III. **Providing access to Energy:**Renewable energy technology can give formerly energy-deprived communities, particularly those in developing nations, access to energy. Given that having access to energy is necessary for many parts of daily life, including lighting, cooking, and heating, this can aid in reducing poverty and enhancing quality of life.
- IV. **Job Creation:** The manufacture and installation of renewable energy systems are two key areas where renewable energy technologies can provide employment and boost economic growth. For instance, the expansion of the solar power sector has led to a significant increase in the number of jobs in solar panel manufacturing and solar system installation.
- V. **Supporting rural development:** By giving rural people access to energy, renewable energy technologies can assist rural development by enhancing liability, boosting agricultural productivity, and promoting economic expansion.

A sustainable future can be assured for everybody with the adoption of clean, renewable energy sources, which will benefit both the current and upcoming generations in terms of the economy, society, and the environment. To prevent the harmful effects of climate change and secure a brighter future for all, governments, organisations, and individuals must collaborate in order to expedite the transition to a more sustainable energy future.

3.5 The Future of Clean Energy

The installation of more renewable energy capacity globally over the past few years than all new nuclear and fossil fuel capacity put together suggests a bright future for clean energy. Over one-third of the installed electricity capacity worldwide is now derived from renewable sources. The UK was powered entirely by renewable energy for the first time ever for two months on Wednesday, June 10, 2020, as an illustration of this trend. Renewable energy sources are the key to supplying sustainable energy solutions and preventing climate change at the same time as the world's population continues to expand. The adoption of clean energy is not simply taking place at the federal level because local governments are also developing laws to promote the usage of renewable energy sources. Over 100 cities across the world now use at least 70% renewable

energy. In the US, 29 states have set renewable energy portfolios to mandate that a specific percentage of energy consumption should originate from renewable sources. Corporations are also contributing by buying record amounts of renewable energy as more cities try to become 100% renewable. Given that fossil fuels are a limited resource, it stands to reason that renewable energy sources will be more prevalent in the future and will likely be less expensive as a result.

4. Latest Trends and Inventions on Clean Energy Technologies

The development of sustainable energy technology must move more quickly if we are to meet the Net Zero Emissions by 2050 Scenario. While the majority of CO₂ emission reductions can be made by 2030 using current technology, the path to 2050 depends on innovations that are not yet prepared for general use, particularly in industries that are challenging to decarbonize, such as heavy industry and long-distance transportation.

The urgent need to switch to renewable energy sources has gained more attention in recent years. The promise of renewable energy has come into sharp view as the globe struggles with the effects of climate change and the depletion of fossil resources. The production of energy from renewable resources, such as sunshine, wind, and water, presents a promising way to meet our demands while reducing the negative environmental effects of more conventional methods. Unlocking the full potential of renewable energy today, however, requires constant innovation, scientific discovery, and technical improvement.

4.1 Latest Trends

4.1.1 Solar Power: Exploiting the Power of the Sun

One of the most promising renewable energy sources today is solar energy, thanks to improvements in photovoltaic (PV) technology that have resulted in more affordable and efficient solar panels. Solar installations are becoming more prevalent in both residential and business settings, and solar energy has been progressively used on a global scale. The way we use solar power in daily life is changing because to innovations like solar windows, solar roof tiles, and transparent solar panels. Additionally, the method we produce electricity from the sun is changing thanks to massive solar farms and floating solar arrays on waterways.

4.1.2 Wind Energy: Tapping into the Power of the Wind

The potential of wind energy has increased as a result of recent advances. The capacity of wind farms to produce power has greatly grown thanks to the development of larger and more effective wind turbines. Additionally, improvements in offshore wind technology are unlocking a wealth of untapped resources for the generation of wind energy. Deepwater floating wind farms have tremendous promise for capturing stronger and more reliable wind currents. Additionally increasing efficiency and optimising power output is the incorporation of artificial intelligence and machine learning into wind turbine design and operation.

4.1.3 Energy Storage: Transforming the Way for Renewable Integration

The intermittent nature of renewable energy sources makes it difficult to integrate them into the current electrical systems. However, improvements in energy storage technology are extremely important in resolving this problem. Due to their fast-falling costs and rising efficiency, lithium-ion batteries have supplanted other energy storage technologies. Other cutting-edge technologies for storing renewable energy are emerging in addition to batteries, including pumped hydro storage, compressed air energy storage, and improved flow batteries. These storage technologies make it possible to seamlessly integrate renewable energy into the grid, assuring a steady and dependable supply of electricity.

4.1.4 Smart Grids and Microgrids: Empowering Local Energy Systems

The distribution and consumption of energy are changing as a result of the development of smart grids and microgrids. Advanced sensors, communication networks, and data analytics are used by smart grids to optimise energy use, eliminate waste, and enhance system stability. They make it possible for electric cars, energy storage devices, and renewable energy sources to coexist seamlessly, resulting in a more effective and reliable energy infrastructure. On the other side, localised power generation and delivery are offered by microgrids, which frequently use renewable energy sources. They give towns, businesses, and even isolated places the chance to become energy autonomous and decoupled from the main grid.

4.1.5 Bioenergy and Geothermal: Boosting the Green Energy Portfolio

There are other intriguing sources of energy that are gaining pace, however solar and wind power still dominate the renewable energy market. Biofuel production, biomass power plants, and biogas generation are all types of bioenergy that are obtained from organic matter. It provides a greener way to produce fuel for transportation as well as electricity. Another safe and dependable source of energy is geothermal energy, which is produced from the heat that the Earth holds. Geothermal energy is becoming more widely available and economically viable because to improved geothermal systems and geothermal heat pumps.

4.1.6 Hydrogen and Fuel Cells: A Versatile Energy Courier

A versatile energy source with the potential to transform many industries is hydrogen. It can be made through electrolysis from renewable resources and used for power generation, industrial processes, and transportation. Traditional combustion engines can be replaced with fuel cells, which produce electricity through a chemical reaction between hydrogen and oxygen. Fuel cells are a clean and effective alternative. In order to demonstrate the game-changing potential of hydrogen as an energy source, stationary fuel cells for home and commercial use as well as fuel cell-powered cars are gaining popularity.

4.2 Unusual Technologies Emerging in Clean Energy

Innovations in green technology are transforming how we produce energy, recycle consumer items, and live more sustainably. Actually, we wouldn't have solar panels, wind turbines, or electric cars if it weren't for such inventions. We also recognise that not all environmental innovations are as useful as wind turbines and solar power. However, we create useful applications from these ground-breaking technologies that may guide us towards a cleaner future. These six novel sustainable energy technologies are emerging.

4.2.1 Living Architecture

What does "living architecture" actually mean? Integrating live or organic material with conventional architectural systems is known as "living architecture." Examples of living architecture include green roofs, bio-concrete structures, green walls, natural swimming pools, and bridges formed of complicated root systems. Future living examples of architecture are similar to the Welsh building plan for Swansea Picton Yard. The inhabitants of this "living" structure will include people, fish, veggies, and plants. La Chanh Nguyen's moss carpet is another remarkable example of living architecture in a house.

4.2.2 Air Purifying Roof Tiles

Air-purifying roof tiles (and air-purifying pavement) are a novel development in green technology. Titanium dioxide, which helps to purify the air, is applied to the tiles. When exposed to UV light, titanium dioxide acts as a photocatalyst, oxidising nitrogen oxides and volatile organic molecules into soluble nitrates and fatty acids.

According to UC Riverside research, thick titanium dioxide coatings on roof tiles can cut greenhouse gas emissions by 97%, while thinner, more affordable coatings can still cut emissions by 88%. The end result of this technology might be a roof that costs just \$5 to coat and that removes 21g of nitrogen oxide every day, or around 11,000 miles' worth of emissions from a car.

4.2.3 Electric Boats

Unbelievably, electric boats have been in operation for more than 120 years. Although petrol combustion engines still power the majority of boats today, interest in this renewable maritime energy source has been slowly rising, particularly as more effective solar cells have been accessible. The German firm Torqeedo is one that is at the forefront of electric boat innovation. Electric power has environmental advantages, but it also eliminates the dangers of storing volatile fuels onboard.

"This is a significant change in the direction that boat propulsion is taking. We think Torqeedo will make waves on the water similar to what Tesla did for automobiles by making electric accessible and acceptable, according to Jason Hodder, Torqeedo Product Manager at Power Equipment.

4.2.4 Printable, Flexible, Organic Solar Cells

Organic photovoltaics, in contrast to the solar cells you're used to seeing, are made of substances that are dissolved in ink and can be printed and moulded using straightforward methods. The end result is a light-weight, flexible, semi-transparent sheet that generates electricity from solar energy.

A new innovation in solar energy is organic photovoltaics (OPV), which uses a carbon basis and fullerene to generate an ink. To absorb solar energy, 0.2 micrometres of ink are printed on flexible surfaces. One kilogramme of the polymer may be used to print a solar cell the size of a football pitch using this extraordinarily thin layering technique. The end product is a thin, flexible, and translucent material. According to Hannah Burckstummer's TED talk, this module can capture both interior light and solar energy.

4.2.5 Customized Color Solar Panels

Thanks to firms like Kameleon Solar, solar panels can now be concealed from view. Custom-made coloured solar panels (that don't seem like solar panels) are designed and constructed by the Dutch photovoltaics business for use in building integrations. Since 2015, they have developed technologies including ColorBlast™, which provides real design flexibility for solar façades, as well as coloured glass, coloured cells, and coloured cells themselves.

4.2.6 Biodegradable Building Materials

Think of maize stalks and mushroom roots fusing together to form bricks as the mushrooms consume the stalks. The bio-brick technology in question is an illustration of a type of building material with a circular lifespan. They start out in the soil as fungus and plant debris, are converted into bricks, and then biodegrade when put back into the soil, giving the subsequent crop of plants nutrients. Hy-Fi, the brainchild of Designer David Benjamin of New York architects The Living, is one business that does this.

Hy-Fi provides both an alluring physical setting and a brand-new approach to sustainable building. They built a 13-meter tower in 2014, used it to host free cultural events for three months, tested and improved a new, low-energy biological building material, produced 10,000 compostable bricks, composted the bricks, and then returned the composted soil to nearby community gardens.

A North Carolina-based business called BioMASON has created a technique that grows construction materials based on biocement using microorganisms. With the use of this technology, the material can be locally grown and adapted. To create bricks, the units are combined with microbes that are fed an aqueous solution. The strength of biocement™ materials, which are utilised as a green substitute, is comparable to that of conventional masonry.

4.3 The Future of Clean Technology

Renewable energy has the potential to completely alter the way that people access energy in the future. Green technology will develop further, providing cleaner, more efficient, and affordable options for supplying our energy needs while lowering our carbon footprint, with continuing investments, encouraging legislation, and international cooperation. For future generations, we can create a resilient and sustainable planet if we adopt these technologies and work towards a more environmentally friendly future.

5. Conclusion

As the use of fossil fuels continues to decline, clean energy appears to be the solution to humanity's global power needs. The cost of developing and installing these new power solutions will decrease as the movement towards clean, green, and renewable energy advances.

As more towns, states, and countries commit to a green power agenda, more people will begin to recognise the environmental, sociological, and economic benefits of clean energy.

According to statistics published annually by the International Energy Agency (IEA), the share of renewable energy sources in the world's electricity supply will rise from 28.7% in 2021 to 43% in 2030, and they will be responsible for 2/3 of the increase in electricity demand recorded during that time, primarily through wind and photovoltaic technologies.

The IEA predicts that by 2040, global electricity demand would have grown by 70%, accounting for 24% of total energy consumption, up from 18% at the time. The main drivers of this growth are the developing economies of South-East Asia, the Middle East, Africa, India, and China.

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