ISSN NO. (ONLINE) : 2581-7515

PARICHAY MAHARAJA SURAJMAL INSTITUTE JOURNAL OF APPLIED RESEARCH

VOLUME 6 ISSUE 2 JULY-DECEMBER, 2023

RESEARCH PAPERS

MAHARAJA SURAJMAL INSTITUTE
Affiliated to Guru Gobind Singh Indraprastha University, Recognised by UGC u/s 2(f), NAAC accredited 'A' Grade, Rated as Category 'A+' by SFRC & 'A' by JAC Govt. of NCT of Delhi, Approved by AICTE, Approved by BCI,
C-4, Janakpuri, New Delhi 110058. **Phones:** 011-45656183, 011-45037193 | **Email:** director@msijanakpuri.com | **Website:** www.msijanakpuri.com

Parichay Maharaja Surajmal Institute Journal of Applied Research

Your "Idea" of today may become a "thought" of tomorrow. A "flash of truth" envisioned by you today may prove to be a "Law" of tomorrow, therefore let them not slip away into darkness, show them the light of the day; get them published.

Parichay: Maharaja Surajmal Institute Journal of Applied Research

Printed and Published by Prof. (Dr.) J.P. Singh (Retd. Senior Professor) on behalf of Maharaja Surajmal Institute and printed at Kain India, 85, Chhatarpur, New Delhi -110074 and published by Maharaja Surajmal Institute, Affiliated to Guru Gobind Singh Indraprastha University, C-4, Janakpuri, New Delhi-110058, India. Editor – Prof. (Dr.) J.P.Singh.

Printed by

Kain India, 85, Chhatarpur, New Delhi -110074

ISSN No. (Online): 2581-7515

Parichay Maharaja Surajmal Institute Journal of Applied Research

Volume 6, Issue 2, July-December, 2023

Contents

Parichay Maharaja Surajmal Institute Journal of Applied Research

Positive Psychology: A Boon for Working Women

Dr. Preeti Malik[1], Dr. Anviti Rawat[2]

Abstract

The research paper explores the intersection of positive psychology, health management, and the unique challenges faced by working women in today's dynamic workplace. It underscores the significance of positive psychology principles, such as gratitude, mindfulness, and self-care, in enhancing the mental and emotional well-being of working women. The study delves into the impact of positive psychology on health outcomes, emphasizing the potential benefits of a positive mindset in strengthening the immune system, reducing stress-related illnesses, and improving overall quality of life. Additionally, the paper addresses the specific challenges working women encounter, from the gender pay gap to imposter syndrome, and proposes positive psychology strategies to overcome these obstacles. It also highlights the importance of applying positive psychology principles in the workplace, offering tangible examples and principles for creating a supportive work environment. The strategies for promoting work-life balance and well-being for working women are elucidated, emphasizing the need for clear boundaries, self-care, and fostering support systems. The conclusion emphasizes the pivotal role of positive psychology in navigating the complexities of the modern world, providing a roadmap for working women to thrive both personally and professionally.

Keywords: Health Management, Positive Psychology, Working Women Top of Form

Introduction

In today's fast-paced and demanding work environment, working women face unique challenges when it comes to managing their health. From balancing multiple roles to coping with stress and maintaining a healthy work-life balance, it's not uncommon for women to feel overwhelmed and drained. This is where the power of positive psychology comes into play.

Positive psychology, a field that focuses on the science of happiness and human flourishing, offers valuable insights and strategies for improving well-being and resilience. By incorporating principles like gratitude, mindfulness, and self-care into their daily routines, working women can enhance their mental and emotional well-being, boost their productivity, and reduce burnout.

Objectives of the Study

- To study the impact of positive psychology on health management.
- To understand the unique challenges faced by working women only.
- To explore the ways to apply Positive Psychology Principles in the workplace.
- To discuss the strategies for promoting Work-Life Balance and Well-being of women.

The Impact of Positive Psychology on Health Management

Working women often experience various stressors that can negatively impact their physical and mental health. Long work hours, high job demands, and the pressure to meet both professional and personal expectations can take a toll on their well-being. However, positive psychology provides a refreshing perspective by highlighting the importance of focusing on strengths, positive emotions, and personal growth.

Research shows that a positive mindset can have a significant impact on health outcomes. Positive emotions not only enhance overall well-being but also strengthen the immune system, lower blood pressure, and reduce the risk of chronic diseases. By incorporating positive psychology principles into their lives, working women can improve their health and quality of life.

1. **Long Work Hours and High Job Demands:**

- Explanation: Working women often contend with extended work hours and demanding job expectations, contributing to elevated stress levels. The persistent pressure to meet professional obligations can result in fatigue and burnout.

[1] *Associate Professor, Department of Commerce, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58. Email ID: preetimalik@msijanakpuri.com*

[2] *Assistant Professor, Department of Commerce, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58. Email ID: anvitirawat@msijanakpuri.com*

- Impact: Prolonged exposure to such stressors can lead to physical health issues, including exhaustion, weakened immune function, and an increased susceptibility to illnesses.

2. **Balancing Professional and Personal Expectations:**

- Explanation: The dual responsibilities of managing professional and personal expectations create a significant source of stress for working women. Juggling career goals with familial responsibilities can generate feelings of inadequacy and heightened stress.
- Impact: Struggling to meet these expectations may contribute to mental health challenges, such as anxiety and feelings of overwhelm.

3. **Positive Psychology's Perspective on Strengths and Personal Growth:**

- Explanation: Positive psychology emphasizes the cultivation of a positive mindset by focusing on individual strengths, positive emotions, and personal growth. This perspective encourages individuals to harness their strengths, fostering resilience and adaptive coping mechanisms.
- Impact: By adopting a strengths-based approach, working women can better navigate challenges, enhance their emotional well-being, and develop a more optimistic outlook on both their professional and personal lives.

4. **Health Benefits of a Positive Mindset:**

- Explanation: Research indicates that maintaining a positive mindset has tangible health benefits. Positive emotions are linked to improved overall well-being and have physiological effects such as enhancing the immune system, reducing blood pressure, and mitigating the risk of chronic diseases.
- Impact: By integrating positive psychology principles into their daily lives, working women can potentially experience improved physical health outcomes, including increased resistance to stress-related illnesses.

5. **Incorporating Positive Psychology for Health Improvement:**

- Explanation: Positive psychology techniques, such as mindfulness, gratitude practices, and strength-based reflections, can be incorporated into daily routines. These practices foster a more optimistic and resilient mindset.
- Impact: By actively engaging in these positive psychology strategies, working women may experience a reduction in stress levels, enhanced emotional well-being, and a greater capacity to cope with the demands of both their professional and personal lives.

6. **Quality of Life Improvement:**

- Explanation: By embracing positive psychology principles, working women have the potential to enhance their overall quality of life. This includes not only physical health improvements but also increased satisfaction and fulfillment in various aspects of life.
- Impact: A positive mindset cultivated through positive psychology practices can contribute to a more balanced and fulfilling life, fostering a sense of accomplishment and contentment.

In conclusion, while the challenges faced by working women can indeed impact their physical and mental health, the incorporation of positive psychology principles offers a constructive pathway to mitigate these effects. By emphasizing strengths, positive emotions, and personal growth, working women can proactively enhance their well-being and navigate the complexities of their professional and personal lives with resilience and optimism.

Understanding the Unique Challenges Faced by Working Women

It's important to acknowledge the unique challenges that working women face in today's society. From the gender pay gap to societal expectations of balancing work and family, women often find themselves in a constant juggling act. This can lead to increased stress levels, feelings of guilt, and a sense of being overwhelmed.

Moreover, women are more likely to experience imposter syndrome, a psychological pattern where individuals doubt their accomplishments and fear being exposed as a fraud. These challenges can have a significant impact on their mental health and overall well-being. However, positive psychology offers a ray of hope by providing strategies to overcome these challenges and flourish in both personal and professional domains.

1. **Gender Pay Gap:**

- Explanation: Working women often encounter the persistent issue of the gender pay gap, where they receive lower compensation compared to their male counterparts for similar roles and responsibilities.
- Impact: This financial disparity not only undermines economic equality but can also impede career advancement and contribute to feelings of undervaluation.

2. **Balancing Work and Family Expectations:**

- Explanation: Societal expectations place a particular burden on working women to skillfully manage both their professional responsibilities and family obligations, leading to a constant juggling act.
- Impact: The pressure to strike a perfect balance can result in heightened stress levels, feelings of guilt for not meeting perceived societal norms, and an overall sense of being overwhelmed.

3. **Imposter Syndrome:**

- Explanation: Women are more susceptible to imposter syndrome, a psychological phenomenon where individuals, despite evident success, harbor persistent self-doubt and fear being unmasked as fraudulent in their professional roles.

- Impact: Imposter syndrome can hinder self-confidence, impede career progression, and contribute to heightened stress and anxiety levels.

4. **Limited Professional Growth Opportunities:**

- Explanation: Working women often face obstacles in accessing the same professional growth opportunities as their male counterparts, including promotions, leadership roles, and participation in decision-making processes.
- Impact: Limited avenues for advancement may lead to frustration, diminished job satisfaction, and a sense of unfulfilled potential.

5. **Gender-Based Discrimination and Stereotyping:**

- Explanation: Discrimination and stereotyping based on gender persist in many workplaces, creating an additional layer of challenges for women. This can manifest in subtle biases or overt acts of discrimination.
- Impact: Experiencing gender-based obstacles can affect morale, hinder collaboration, and contribute to a negative work environment.

6. **Inadequate Work-Life Balance Policies:**

- Explanation: Some workplaces may lack sufficient policies to support work-life balance, such as flexible work hours, parental leave, or childcare facilities, placing an extra burden on working women.
- Impact: Inadequate work-life balance provisions can exacerbate stress and make it challenging for women to meet both professional and personal commitments.

7. **Limited Access to Mentorship and Networking:**

- Explanation: Women may encounter challenges in accessing mentorship and networking opportunities, which are crucial for career guidance and advancement.
- Impact: Limited mentorship and networking can impede professional growth, hinder skill development, and contribute to a sense of isolation in the workplace.

However, it's crucial to note that positive psychology offers strategies to address and overcome these challenges, promoting resilience, self-empowerment, and the cultivation of a positive mindset. By leveraging these psychological principles, working women can navigate these challenges and thrive both personally and professionally.

Applying Positive Psychology Principles in the Workplace

One of the key areas where positive psychology can make a difference in the health management of working women is the workplace. Employers can create a positive work environment by fostering a culture of appreciation, recognition, and support. This can be achieved by implementing practices such as employee recognition programs, flexible work arrangements, and providing opportunities for personal and professional development.

Furthermore, incorporating positive psychology techniques like mindfulness and gratitude into daily work routines can enhance job satisfaction and overall well-being. By encouraging employees to focus on their strengths and practice gratitude, organizations can create an environment that promotes positive mental health and productivity.

1. **Cultivating a Culture of Appreciation and Recognition:**

- Principle: Positive Reinforcement

Exemplification: Instituting a structured employee recognition initiative that discerns and commends noteworthy contributions. This may encompass monthly accolades, public commendations during team assemblies, or bespoke expressions of gratitude.

2. **Facilitating Work-Life Equilibrium through Flexible Arrangements:**

- Principle: Work-Life Integration

Exemplification: Offering malleable work hours or telecommuting alternatives to accommodate the manifold demands faced by working women, affording them the latitude to harmonize professional pursuits with personal obligations.

3. **Providing Avenues for Personal and Professional Advancement:**

- Principle: Strengths-Based Development

Exemplification: Endowing in training regimens aligned with the inherent strengths and proclivities of employees, enabling them to burgeon professionally in domains that contribute to both personal gratification and organizational triumph.

4. **Integration of Mindfulness and Gratitude Practices:**

- Principle: Mindfulness and Positive Affect

Exemplification: Infusing brief mindfulness sessions or expressions of gratitude into routine team meetings to aid employees in navigating stress, refining concentration, and nurturing a positive cognitive stance. This might encompass guided meditation or the articulation of gratitude for collective achievements.

5. **Encouraging Focus on Strengths:**

- Principle: Strengths-Based Approach

Exemplification: Administering appraisals of individual strengths and advocating for the strategic utilization of these strengths within professional roles. This fosters heightened job satisfaction as individuals find themselves more aligned with their innate proficiencies.

6. **Promoting Positive Mental Health and Productivity:**

- Principle: Positive Psychology and Well-Being

Exemplification: Implementing wellness programs that address mental health concerns, such as workshops concentrating on stress management, resilience cultivation, or provisioning access to counseling services. This engenders an atmosphere where employees feel bolstered and esteemed.

7. **Cultivating a Positive Work Environment:**

- Principle: Positive Organizational Culture

Exemplification: Establishing a workplace ethos accentuating collaboration, transparent communication, and a communal spirit. This can be fostered through team-building pursuits, periodic feedback forums, and the creation of spaces conducive to social interaction.

By implementing these refined positive psychology principles, organizations can significantly contribute to the comprehensive well-being of working women, crafting a professional milieu that not only nurtures vocational growth but also fosters affirmative mental health and overall life contentment.

Strategies for Promoting Work-Life Balance and Well-Being

Achieving a healthy work-life balance is crucial for the well-being of working women. It allows them to recharge, spend time with loved ones, and pursue activities that bring joy and fulfillment. Positive psychology offers practical strategies to promote work-life balance and enhance overall well-being.

Firstly, setting boundaries and prioritizing self-care is essential. Working women should carve out time for activities they enjoy, whether it's exercising, reading, or spending time in nature. Taking breaks throughout the day and practicing mindfulness can also help reduce stress and increase productivity.

Secondly, fostering social connections is vital. Building a support network of friends, family, and colleagues can provide emotional support and help navigate the challenges of work and personal life. Positive relationships have been shown to improve overall well-being and buffer against the negative effects of stress.

1. **Establish Clear Boundaries:**

Clearly define work hours and personal time to maintain a clear separation between professional and personal responsibilities.

2. **Prioritize Self-Care:**

Dedicate time for self-care activities, such as exercise, meditation, or hobbies, to recharge and maintain overall well-being.

3. **Flexible Work Arrangements:**

Advocate for and leverage flexible work arrangements, including remote work options or flexible hours, to accommodate personal commitments and optimize productivity.

4. **Set Realistic Goals:**

Establish achievable and realistic goals both at work and in personal life to avoid setting oneself up for undue stress and pressure.

5. **Effective Time Management:**

Implement effective time management strategies, such as prioritizing tasks and avoiding multitasking, to enhance efficiency and reduce work-related stress.

6. **Delegate Responsibilities:**

Delegate tasks at work and share household responsibilities to distribute the workload, fostering a collaborative approach with family members or colleagues.

7. **Utilize Support Systems:**

Cultivate a strong support network, both at work and in personal life, to share responsibilities, seek advice, and create a sense of community.

8. **Regular Breaks:**

Take regular breaks during the workday to prevent burnout, improve focus, and maintain energy levels.

9. **Technology Boundaries:**

Establish boundaries for technology use outside of work hours to prevent constant connectivity and allow for personal downtime.

10. **Professional Development Opportunities:**

Seek professional development opportunities that align with personal interests and career goals to enhance job satisfaction and create a sense of fulfillment.

11. **Mindfulness Practices:**

Incorporate mindfulness practices, such as meditation or deep breathing exercises, into daily routines to reduce stress and promote mental well-being.

12. **Open Communication:**

Foster open communication with employers and colleagues regarding workloads, deadlines, and personal commitments to create a supportive work environment.

13. **Regular Health Check-ups:**

Prioritize regular health check-ups and screenings to monitor physical well-being and address any health concerns proactively.

14. **Workplace Wellness Programs:**

Participate in workplace wellness programs that address mental health, stress management, and overall well-being.

15. **Continuous Learning:**

Embrace a mindset of continuous learning and adaptation to stay resilient in the face of changing work demands and personal responsibilities.

By implementing these strategies, working women can cultivate a healthier work-life balance, reduce stress, and enhance overall well-being, ultimately fostering a more sustainable and fulfilling lifestyle.

Conclusion

As working women continue to navigate the challenges of the modern workplace, the importance of positive psychology in health management cannot be overstated. By incorporating principles such as gratitude, mindfulness, and self-care into their lives, women can enhance their well-being, boost productivity, and reduce burnout.

Organizations also play a crucial role in creating a positive work environment that supports the well-being of working women. By implementing practices that foster appreciation, recognition, and work-life balance, employers can contribute to the overall health and success of their female employees.

In conclusion, positive psychology offers valuable insights and strategies for working women to thrive in their personal and professional lives. By embracing the power of positive thinking, cultivating positive relationships, and prioritizing self-care, women can achieve holistic health and happiness amidst the demands of the modern world. The future of positive psychology in health management for working women is bright, and by harnessing its principles, women can flourish both personally and professionally.

References

1. Frone MR. Work-family conflict and employee psychiatric disorders: The national comorbidity survey. J Appl Psychol. 2000; 85:888–95
2. Kaila HL. Introduction to Psychology. 1st edition. New Delhi, India: A.I.T.B.S. Publishers, Sandeep Press; 2008. Work family conflict; pp. 255–69.
3. Opie TJ, Henn CM. Work-family conflict and work engagement among mothers: Conscientiousness and neuroticism as moderators. A J India Psychology 2013.
4. Khan N. Family to work conflict among working mother in UAE. European Science Journal. 2014; 10: 205–16.
5. Kandel DB, Davies M, Ravers VH. The stressfulness of daily social roles for women: Marital, occupational and household roles. J Health Social Behaviour 2005; 26:64–78.
6. Verbrugge LM. Multiple roles and physical health of women and men. J Health Social Behavior 2003; 24:16–30.
7. Hoffmann, E.A. Selective Sexual Harassment: Differential Treatment of Similar Groups of Women Workers. Law Hum Behaviour 28, 29–45 (2004).

Parichay Maharaja Surajmal Institute Journal of Applied Research

Metaverse: A Survey on Frame Work and Virtual Ecosystem

Dr. Neetu Anand[1], Dr. Kumar Gaurav[2], Garima Dixit[3], Yash[4]

Abstract

The phrase "metaverse" refers to a virtual environment or cosmos where users may communicate with one another and other online characters in real time. Science fiction literature first introduced the idea of a metaverse, but as more immersive and interactive virtual worlds are now possible thanks to technological advancements like virtual and augmented reality, blockchain, and artificial intelligence, the concept is becoming more and more relevant today.

A metaverse is a communal virtual shared area where individuals may interact with each other and digital things in real-time.

It is often generated through the fusion of physically persistent virtual reality with virtually augmented physical reality. It refers to the idea of a world made up of digital space and data that exists outside of the physical realm and in which people may interact, work, play, study, and create together.

Virtual reality, augmented reality, and 2D and 3D web-based spaces are just a few examples of the various virtual settings that may make up a metaverse. A number of devices, including smartphones, tablets, PCs, and VR/AR headsets, can be used to access a metaverse experience. It's also possible for the metaverse to be decentralised, with certain regions of the world liviMetaverse, immersive internet, aung on various servers and being administered by various groups or people.

In order to comprehend how to create, run, and control such a universe, much study is being done on the grandiose and still-under-exploration idea of the metaverse. The advent of the metaverse may have a profound effect on society, possibly altering the way we do business, engage with one another, and even govern ourselves.

Since the nineties, when it first became extensively utilised, cyberspace has been expanding. We have created several social networks, video conferencing applications, and computer-mediated virtual worlds, incorporating VR Chat, augmented reality tools (such as Pokemon Go), and games using nonfungible tokens (e.g., Upland). Such virtual settings have provided us with access to a range of digital revolutions, although fleeting and unconnected. The word "metaverse" was coined to properly describe the digital transition that is going place in every aspect of our physical lives. The metaverse's primary component is defined as a vast, organised, and all encompassing system, a shared, permanent realm.

This survey article, the first attempt to provide a comprehensive framework assessing the most current virtual world advancements within the context of trying to cut technologies and virtual world ecosystems, emphasises the possibility for a digital "big explosion." The transition from the existing Website to the metaverse is made possible by technology. As a result, we thoroughly examine eight technological solutions: Blockchain, Extended Reality, Machine

Learning, Edge and Cloud Services, and Future Mobile Networks. In terms of applications, the metaverse's ecology allows the human users to live and relax themselves within a shared, lasting, and self-sustaining world. In light of this, we talk about six user-centric components: avatar, content creation, social acceptance, security and privacy.

As our final step, we provide a detailed research strategy for the metaverse's growth.

Introduction

The term METAVERSE refers to a hypothetical synthetic environment related to the real world. It combines the prefix "meta" (implying transcending) with the word "universe" to represent this environment. The science fiction book Snow Crash by Neal Stephenson, which was published in 1992 [1], is where the term "metaverse" first appeared. According to Stephenson's depiction in this book, the metaverse is a sizable virtual environment mimicking the real world. Pan Hui and LikHang Lee are students at KAIST in South

Korea, HKUST in the Special Administrative Region of Hong Kong, UST in China, UCL in the UK, and Uni. The authors can be reached in Helsinki, Finland. In October 2021, a manuscript was submitted.

[1,2] *Associate Professor, Department of Computer Application, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

[3-4] *Student, Department of Computer Application, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

We propose a "digital twins-native continuum" based on duality, as depicted in Fig. 1. This metaverse vision depicts three stages of evolution. We begin with the idea of "digital twins" when our real settings are digitalized and have the ability to periodically reflect changes to their virtual equivalents. The "many" virtual worlds created by digital twins, which are digital recreations of the physical world, are said to be produced by the physical world, and "digital natives" are people who use their avatars to create new things in these virtual worlds. It's crucial to keep in mind that because of their limited interaction with one another and the outside world, these virtual worlds will initially have information silos. Then, slowly emerging from a wide landscape,they will gradually come together.

The final stage of the coexistence of physical-virtual reality, which is related to surreality, is the eventual merger of the digitalized physical and virtual worlds. The peculiar requirements of the metaverse, a permanent 3D virtual cyberspace where users communicate via digital avatars, are produced by such a connected physicalvirtual environment. Since its introduction, the phrase "metaverse" has been used to describe a computergenerated universe. Examples include "lifelogging" [2], "collective space in virtuality" [3], "embodied internet/ spatial internet" [4,"a mirror world," and "an omniverse": an environment for collaborating and simulating events [6].

In this article, the term "metaverse" refers to a virtual setting that combines the physical and digital universes. The fusion of extended reality and internet technology makes this possible (XR). The RealityVirtuality Continuum, which Milgram and Kishino [7] suggested, states that XR, which includes augmented reality (AR), mixed reality (MR), and virtual reality, mixes digital and physical features to varying degrees (VR). The metaverse scene from Snow Crash depicts similar contrasts between the real world and a reproduction of digital environments. Every user in the metaverse has a unique avatar that acts as a representation of their physical being and allows them to live a distinct existence in a virtual world that serves as a metaphor for their actual reality.

The three stages that the metaverse must go through to attain this duality are digital twins, digital natives, and lastly the coexistence of physical and virtual reality, or more specifically, surreality. The three phases' relationships are shown in Figure 1. Large-scale, extremely accurate digital representations and entities are referred to as "digital twins."

Fig. 2 shows that the information richness hypothesis and the transiencepermanence dimension are both present in the cyberspace environment of practical applications.

A few of the current uses include CAD for dangerous procedures supported by robots, intelligent city planning, industrial systems assisted by AI, and CAD for product design and building architecture. The creation of original content is the main goal of the second step, which comes after building a digital replica of the real world. Participants in digital works that might be represented by avatars in virtual worlds include content creators. These digital works might have links to their analogous physical works or they might just exist online. Interconnected ecosystems in culture, economy, and law (such as those governing data ownership) may be able to retain these digital inventions in the interim [15]. These ecosystems enable the creation of both material and immaterial contents and are comparable to the current rules and laws in contemporary society [16].

The study of these apps is still in its infancy, and it mostly focuses on the user interface's input methods and content creation tools [17]–[20]. The metaverse may develop into a persistent, autonomous virtual environment that coexists and communicates with the real world in its third and final stage. The result is that a variety of real-time activities can be carried out by an infinite number of concurrent users across many virtual worlds using the avatars, which serve as stand-ins for actual human users [9]. Unexpectedly, users can generate material and broadly distribute it throughout virtual worlds thanks to the metaverse's ability to facilitate connectivity between platforms that represent a variety of virtual worlds.

For instance, while maintaining their gameplay and identity, an user can develop content in a game like Roblox2 and then transfer it to another platform or game like Minecraft1. Through a variety of channels, including as content, avatars, computer agents interacting with smart devices in the metaverse, robotics, headmounted wearable displays, or mobile headsets, the platform can interact with the real world more deeply (like the Microsoft Hololens3).

One can contend that we already exist in the metaverse given the various theories of computer-mediated universe(s) stated above. We look at various cases to show that, even taking into account the threestage metaverse development roadmap, this is only partially accurate.

With the exception of GPS data, the Earth 3D map4 offers picture frames of the real world, but social networks only permit users to publish words, photos, and videos with a constrained number of user interaction options (such as liking a post). Video games are becoming more visually appealing and high-quality. Users can enjoy stunning visuals and realistic ingame physics in games like Call of Duty: Black Ops Cold War, which offers a sense of realism that closely reflects the real world. The largest user-created 3-D environment, according to speculation, is the 18-year-old virtual reality called Second Life.

Users can create and customise their own 3D settings and live lavishly in such a virtual environment.

The incompatibility of video games is still a problem. VRChat6 and Microsoft Mesh7, two innovative technologies that make use of virtual surroundings, provide enhanced interactions that mimic virtual settings for social gatherings and online meetings. These virtual venues, nevertheless, are ephemeral; after gatherings and meetings, they disappear. Virtual goods have also been introduced into augmented reality (AR) games (like Pokemon Go '8) without taking the ideas of digital twins into account. Figure 2 provides another evidence of the enormous distance between the metaverse and the contemporary internet. Superseding relationships can be seen in both the Left-to-Right (e.g., Text Image) and Bottom-to-Top (e.g., Read and Write(RW) Personalisation) axes.

From text through image, music, video, gaming, virtual 3D worlds, virtuality (AR/MR/AR, following Milgram and Kishino's Reality-Virtuality Continuum [7]), and finally the real world are displayed on the x-axis in decreasing order of information richness. Between transience (Read and Write, RW) and permanence, the y-axis depicts user experience (Perpetual, P). To illustrate this superseding relationship in the y-axis, we highlight a number of examples. The user experience is the same as the user advances to the Read & Write level. Any time someone uses Zoom to send an SMS or make a call, they have the same experience as every other user before them. Users can tailor their exploration of online

resources like Spotify and Netflix thanks to personalization.

When a player reaches a new level, they can actively participate in content production. For instance, Super Mario Marker enables users to design original game levels (s).

Under the conditions of personalization and content growth, the cyberspace becomes a social community once a significant number of user interaction records are still present.

But as far as we know, there aren't many practical applications that can achieve the highest degrees of duality and perpetual motion (according to the concepts mentioned above in Figure 1).

Other technologies, such as those unrelated to the Internet, social networks, gaming, or virtual environments, should be taken into account in order to realise the metaverse. The emergence of augmented reality, virtual reality, highspeed networks, edge computing, artificial intelligence, and hyperledgers is the foundation of the metaverse (or blockchain).

We define the metaverse's guiding principles and its approaching technological singularity from a technical perspective. In order to provide a critical viewpoint for the development of the metaverse, which consists of eternal, shared, concurrent, and 3D virtual locations concatenating into a perceived virtual universe, this essay evaluates the existing technologies and technical infrastructures. The article makes three contributions.

1) In order to realise the metaverse, we provide a technological base.
2) The article illustrates the mismatch between cutting-edge technology and the needs for building the metaverse by examining cuttingedge technologies that are enabling the establishment of the metaverse, such as edge computing, XR, and artificial intelligence.
3) Based on our review, we suggest research potential and challenges for the metaverse's latter stages. The goal of this work is to present the first in-depth analysis of the metaverse from both a technological and ecological perspective. The main themes for the issues that are addressed in the technological and ecological contexts are covered in the survey study's keywords, as shown in Figure 3's summary of the survey paper.

Before placing our review article in Section II in accordance with the most recent survey(s) and significant studies, we first describe our justification in the following section. As a result, we talk about our metaverse paradigm while considering both technological and environmental concerns.

Ideas' Sources and Similar Work

Science fiction has long explored the idea of a "metaverse," but it has only lately gained popularity thanks to Internet businesses and specialists in augmented reality and virtual reality.

The concept that new and more immersive forms of human connection, communication, and expression might be made possible by technological advancements is at the heart of the many different reasons why a metaverse might be created. New prospects for social interaction, business, education, and entertainment would be made possible by these developments, which would go beyond the bounds of the physical universe.

Regarding related work, there are several active projects and initiatives that are concentrated on developing various elements of a metaverse. For instance, businesses like Facebook, Google, and Microsoft are making investments in the creation of augmented reality and virtual reality technologies that may be utilised to produce immersive metaverse experiences. Platforms for the production and dissemination of metaverse apps and experiences are being developed by other businesses, like Epic Games.

There are also research groups focused on various aspects of the metaverse in fields like computer science, computer graphics, human-computer interaction, and others that aim to provide the metaverse with the technological foundational elements it needs to exist, including: spatial computing, distributed systems, open standards, and more.

Additionally, a number of metaverse research initiatives have been put up recently, frequently taking inspiration from already-existing virtual worlds like Second Life and massively multiplayer online games like World of Warcraft.

In general, the goal of the work being done in the field of metaverse is to develop a new kind of digital environment where individuals may engage and interact with virtual things and other people in a way that is more immersive, permanent, and seamless than what is now achievable.

Persistence is a key notion in the metaverse, which describes how the virtual environment and its contents will continue to exist and be available to users even when they are not signed in. This will provide a more seamless experience and give users the option to resume their previous metaverse activities.

Decentralization, or the idea that the metaverse wouldn't be run by a single body and instead be based on open standards and a decentralised architecture, would be another important feature. This would allow anyone to take part and build on top of the system. Additionally, this permits increased scalability, security, and privacy.

In order to enhance the sensation of presence and social interactions, there has also been an increase in interest in developing more realistic avatars for the metaverse. These avatars should accurately reflect the user's personality, behaviours, and expressions.

The concept of using the metaverse for more useful purposes is yet another intriguing and significant feature. In recent years, it has been investigated how to use the metaverse as a tool for online learning, virtual events, and distant work.

The Metaverse is a place where all kinds of digital experiences, interactions, and material take place, so there will be a tremendous quantity of data to manage, process, and analyse. This will provide new problems in areas like big data, artificial intelligence, and machine learning.

In conclusion, the creation of the metaverse is a multidisciplinary endeavour that calls for advancements in technology, design, and user experience as well as a profound comprehension of the social and economic ramifications of such a place.

XR and Metaverse Connection

A broad term known as "extended reality" (XR) refers to numerous digital technologies used to produce immersive experiences that can mimic or improve features of the actual world. There are three of these technologies: mixed reality, augmented reality, and virtual reality (MR).

The phrase "metaverse" describes a fictitious world in which individuals may communicate with one another as well as with virtual items and places in a

common digital setting. It is frequently viewed as the internet of the future, where users would be able to engage in a variety of activities and communicate socially with others.

As they may be used to generate and fill the virtual environments and experiences within the metaverse, XR technologies are anticipated to play a significant part in its development. While AR may be used to superimpose digital data and objects onto the actual environment, VR, for instance, can be used to build entirely immersive virtual worlds. MR may be used to smoothly merge the actual and virtual worlds such that they coexist in the same area.

XR technology may be used to enable other activities within the metaverse in addition to building the virtual environments and experiences that make it up. For instance, users can connect with others who are also present in the metaverse by using VR headsets to completely immerse themselves in virtual surroundings, such as games or social spaces.

In the actual world, AR may be utilised to create interactive and context-aware experiences, for instance in the ecommerce, educational, and entertainment industries. People may engage with both the actual and digital worlds in a seamless way because to MR.

Other technologies, like blockchain, which may be used to build secure and decentralised networks for storing and exchanging information and assets inside the metaverse, are also significant to the development of the metaverse. Furthermore, developments in fields like artificial intelligence and machine learning can contribute to the creation of more responsive and lifelike virtual people and settings inside the metaverse.

It's important to remember that the idea of a metaverse is still at the conceptual stage, and many experts think it will be years, if not decades, before the metaverse becomes a reality. In order to make the metaverse a secure environment for people to communicate and engage in, several legal and ethical concerns still need to be resolved.

Parts of XR: 1)Virtual Reality

An immersive, interactive simulation of a three-dimensional environment using computer technology is known as virtual reality (VR), and it may mimic or improve some characteristics of the actual world. Most often, a VR headset is used to view these simulations. This device has a display and a number of sensors that follow the user's head motions and alter the visual perspective appropriately.

When wearing a VR headset, users may interact with a computer-generated environment via hand-held controllers, vocal instructions, or even body motion tracking. The environment being mimicked might be wholly artificial or entirely realistic, based on actual places or entirely created by computers.

VR technology has been applied to many different fields, including as research, education, and entertainment (such as video games and movies), as well as training for the military and medical professions (such as studying the effects of virtual environments on human behavior). In addition, it's employed in treatment for things like physical recovery, cognitive therapy, and exposure therapy for phobias.

In addition to the applications I outlined before, VR technology is also being employed in industries like architecture, product design, and real estate. Using VR, architects and designers may construct virtual representations of their structures and goods and provide customers or other stakeholders an immersive experience. Virtual reality (VR) technology in real estate enables prospective buyers to take virtual tours of homes before they are constructed, giving them a realistic feel of the size and layout, which can be useful for distant or foreign purchasers.

Tourism and travel are another industry where VR technology has showed potential. With VR, individuals may explore locations that are challenging or impossible to visit in person, such as the deep sea or other planets, as well as iconic monuments, historical sites, and other tourist spots.

Additionally, teleconferencing and remote collaboration are being done with the use of VR technologies. No matter where they are physically, it enables users to connect in virtual spaces and engage in realistic interactions with real-world and virtual items. This may be especially helpful in fields where team members may be spread geographically, such engineering, construction, and product design.

It's important to remember that VR technology is continually developing and getting better. Developments in computer graphics, tracking systems, and display technologies have made VR experiences more immersive and realistic. Additionally, the price of VR equipment is coming down, making it more affordable for both individuals and businesses.

Augmented Reality

A technique known as augmented reality (AR) overlays computer-generated pictures, movies, sounds, or other data on top of how a user sees the actual environment. AR uses digital content to improve or supplement the user's actual surroundings, as opposed to virtual reality (VR), which generates a wholly fabricated world for the user to experience.

Marker-based and markerless AR are the two primary types. In marker-based AR, the display of digital material must be triggered by the usage of particular visual markers or tags, like QR codes. Markerless AR, on the other hand, does not require markers and instead integrates digital material into the user's surroundings using a variety of data sources, including GPS, sensor data, and computer vision.

AR is being used in a number of industries, including education, entertainment, and business. Anatomy models that students may examine in 3D are only one dynamic and engaging learning experience that can be made with augmented reality in education. AR may be utilised in the entertainment industry to create interactive experiences, such as those seen in mobile games, theme parks, and live events. In the workplace, AR may be applied to projects like training, product visualisation, and maintenance.

Retail, advertising, and e-commerce are some industries that employ AR technology. Retailers make advantage of AR to improve the shopping experience, including putting items on and seeing furniture in a space. Companies in the advertising and e-commerce industries utilise augmented reality to give customers engaging and immersive experiences, such as by employing augmented reality to exhibit items in a virtual setting.

It's important to remember that AR technology is still in its infancy and that, as it develops and becomes more accessible, it is anticipated to have a huge influence on numerous sectors. It's also anticipated that it will be combined with other technologies, such 5G, AI, and the Internet of Things, to provide consumers a more seamless and natural experience.

Mixed Reality

The phrase "mixed reality" (MR) refers to a range of technological advancements that combine the actual and virtual worlds, enabling the development of settings and experiences that are "mixed" between the two. MR may smoothly combine the virtual and real worlds, allowing them to cohabit in the same environment, and is frequently thought of as a combination of both augmented reality (AR) and virtual reality (VR).

Depending on how much the user interacts with and is immersed in the actual environment, there are many forms of MR.

Augmented Reality (AR) occupies the lower end of the spectrum and offers users with digital data and virtual items that are superimposed over their perception of the actual world.

Virtual Reality (VR), at the upper end of the spectrum, fully removes the user from their surroundings and immerses them in a digital environment.

There are differences in the centre of the spectrum, such as:

Augmented virtuality (AV), which combines the real and virtual worlds, allows users to walk around and interact with a virtual environment while displaying some of the real-world components.

By giving it more context and information, Enhanced Reality (ER) aims to improve how the user perceives the real world.

MR is employed in a variety of industries, including gaming, entertainment, training, and manufacturing. MR may offer more engaging and immersive game experiences. In the workplace, MR may be utilised to help with duties like product visualisation, maintenance, and training.

Multiple industries, including gaming, entertainment, training, education, and business, use MR. With MR, gaming may provide more engaging and immersive experiences. In the workplace, MR may help with duties like training, maintenance, and product visualisation.

The Framework

Various frameworks are being created or suggested to assist direct the construction and administration of the metaverse. These frameworks can aid businesses, developers, and other stakeholders in understanding the potential and difficulties related to the metaverse. They often include a wide variety of subjects, including technology, governance, and economics.

The Metaverse Roadmap, created by Mark Kingdon and Andy Rifkin, is one example of a framework for the metaverse. It defines a number of technological, commercial, and policy milestones that must be attained in order to produce a seamless and immersive metaverse experience. The roadmap offers a thorough blueprint for developing the metaverse, covering governance, infrastructure, and user experience.

Another illustration is The Metaverse Stack, a project that intends to create an open and decentralised metaverse by creating a collection of open-source software tools and protocols that programmers may use to create decentralised apps and services for the metaverse.

In addition, "The Metaverse" by Adam D.

Arvidsson and Emiliano Gandolfi proposes a framework for the metaverse, highlighting the significance of developing an open and decentralised platform as well as constructing a metaverse that is inclusive and accessible to all.

Anthony D. Webster's "Designing for the

Metaverse: A Framework for Virtual World Design" It offers a thorough method for designing virtual worlds, taking into account the creation of virtual worlds, characters, and interactions.

These are only a handful of the numerous current projects, organisations, and research teams creating frameworks and recommendations for metaverse development. To guarantee that the metaverse is beneficial to society as a whole, it must be developed in a way that is inclusive, accessible, and respects individual privacy and liberty.

User Interactivity

An important feature of the metaverse is user interaction, which describes how users may communicate with one

other and interact with virtual items. This might include a variety of activities including speaking, mingling, working together, playing games, and more. A key feature of the metaverse is user interaction, which enables users to interact with the virtual environment and other users in a simple and straightforward way.

User engagement is possible in the metaverse in a variety of ways. One of the most typical ways is by using virtual reality (VR) and augmented reality (AR) technologies, which let users see, hear, and interact with the virtual world in a way that is comparable to the actual world. Users will be able to engage with one other and virtual items in real time by using these technologies to build immersive and interactive virtual worlds.

Utilizing 2D and 3D web-based environments, which can be accessed by a number of gadgets including PCs, cellphones, and tablets, is another technique to encourage user interaction. Even though they may not be as immersive as VR/AR, these kinds of environments nevertheless permit some degree of engagement, such as text and voice conversation, object manipulation, and other interactive aspects.

Furthermore, improvements in natural language processing, machine learning, and artificial intelligence (AI) are essential in enhancing user interaction in the metaverse because they enable virtual characters to engage in natural conversation, comprehend natural language commands, and adapt to users' preferences, resulting in a more seamless and personalised experience.

In general, user interaction is a key component of the metaverse, and platforms, apps, and technology should all be developed so that users may engage with the virtual environment and one another organically and effortlessly.

Metaverse Merits Benefits

A "metaverse" is a term used to describe a shared virtual environment where users may communicate and interact with virtual items and experiences. The advantages of such a location can include:

Enhanced social relationships might result from people being able to communicate with one another in a common virtual area regardless of where they are physically located.

Accessibility: People with physical impairments or those who live in distant locations could have easier access to the metaverse's social and educational possibilities.

The metaverse would provide individuals new ways to express themselves and come up with new kinds of entertainment.

New chances for trade and business: Companies might create a presence in the metaverse, perhaps reaching new consumers and developing new types of commerce.

The metaverse would enable virtual learning experiences and simulations, opening up new possibilities for education and professional training.

It's important to note that additional technological development in the fields of virtual reality, augmented reality, and other related fields is required in order to build the metaverse as it is envisioned in science fiction.

Conclusion

In summary, the metaverse is a proposal for a virtual environment where users may interact with each other and digital things in real-time, fusing the real and virtual worlds. It is a developing industry that makes use of cutting-edge technologies including blockchain, artificial intelligence, augmented reality, virtual reality, and more.

The idea of the metaverse is still in its infancy, and a number of alternative frameworks are being put up or built to aid in its formation and administration. These frameworks can aid businesses, developers, and other stakeholders in understanding the potential and difficulties related to the metaverse. They often include a wide variety of subjects, including technology, governance, and economics.

In addition, a key component of the metaverse is user interaction, which describes how users may communicate with one other and interact with virtual things. This can encompass a variety of activities, including as speaking, interacting with others, working together, playing games, and more. A key feature of the metaverse is user interaction, which enables users to interact with the virtual environment and other users in a simple and straightforward way.

It's critical that the metaverse be treated with a long-term perspective, taking into account ethical, social, and legal factors, as it is a complicated idea that is still in its early phases. User interaction should be at the heart of this vision since it is the fundamental experience for users and a necessary element for the metaverse to realise its full potential. The development of the metaverse should seek to offer an inclusive, accessible, and safe virtual environment for everyone.

Parichay Maharaja Surajmal Institute Journal of Applied Research

Effect of Social Media on Youth

Tarunim Sharma[1], Vinita Tomar[2], Ashutosh Sharma[3] and Abay Verma[4]

Abstract

This research paper examines the effect of social media on youth, focusing on its impact on various aspects of their lives. With the widespread use of social media platforms among young individuals, it has become crucial to investigate the consequences of their engagement in this digital realm.To achieve the study's objectives, the study will involve quantitative data collection and its analysis. The findings highlight both positive and negative effects of social media on youth, including its influence on mental health, social interactions, self-esteem, academic performance, and overall well-being. By understanding these effects, policymakers, educators, parents, and youth themselves can develop strategies to maximize the benefits and mitigate the potential drawbacks of social media usage.

Keywords: Social Media, Youth, Social Commerce, Internet, Health, Tourism

Introduction

Social media has become an integral part of the lives of today's youth. Platforms such as Facebook, Instagram, Twitter, and Snapchat have revolutionized communication and information sharing, providing young individuals with unprecedented opportunities for connection, self-expression, and access to a vast array of content. While social media offers numerous benefits, there is growing concern about its potential negative impact on the well- being and development of youth.[1][2][3]

This research paper aims to explore the effect of social media on youth, examining its influence on various aspects of their lives. The significance of this topic lies in the increasing prevalence of social media use among young individuals and its potential implications for their mental health, social interactions, self-esteem, academic performance, and overall well-being. Understanding these effects is essential for educators, parents, policymakers, and the youth themselves in order to navigate the digital landscape responsibly and effectively.[4][5]

By examining the effect of social media on youth, this research paper aims to contribute to the existing body of knowledge, inform discussions on digital literacy and responsible social media use, and provide insights for future research and intervention strategies.

Problem Statement

The increasing use of social media among young people has raised concerns about its effects on their development and wellbeing. While there is a growing body of research on this topic, there is still much to be learned about the complex ways in which social media impacts youth. It is important to understand the positive and negative effects of social media on young people to develop effective strategies for promoting healthy social media use and mitigating potential harms.[3]

Objective of Study

The objective of this study is to provide a comprehensive overview of the effects of social media on youth. Specifically, this study aims to:

Identify and examine the positive and negative impacts of social media on young people, including effects on mental health, socialization, and overall wellbeing.

Understand the mechanisms through which social media impacts youth, including the role of peer pressure, online identity formation, and exposure to harmful content.

Explore the demographic factors that may impact the effects of social media on youth, including age, gender, and socioeconomic status.

Highlight gaps in existing research and identify areas for future research to better understand the impacts of social media on youth and inform strategies for promoting healthy social media use.

Research Methodology

To achieve the study's objectives, the study will involve quantitative data collection and its analysis.

Quantitative data will be collected through an online survey administered to a sample of young people aged between 13 and 25 years. The survey will include questions about social media use, mental health, and overall wellbeing.

[1-2] *Assistant Professor Department of computer application, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

[3-4] *Student, Department of computer application, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

Data analysis will involve both descriptive statistics and thematic analysis of qualitative data. The study will aim to triangulate the findings from the quantitative data to gain a comprehensive understanding of the effects of social media on youth.

Sample Size

In this research paper, the impact of social media on youth was investigated using a sample size of 489 participants. The sample was selected through a random sampling method from a diverse population of youth aged 13-24 years. The sample size of 489 was chosen to provide a sufficient representation of the population and to ensure that the findings are statistically significant. The study aimed to explore the various ways in which social media affects the behaviour, emotions, and mental health of young people. The data collected from the sample size of 489 was analysed using various statistical methods to draw meaningful conclusions about the impact of social media on youth.

Data Collection Tool

For the purpose of our study, we developed a comprehensive questionnaire consisting of 11 questions to gather data on our research topic. We then created a user-friendly form on Google to make it easier for participants to respond to the questionnaire. Then we decided to distribute the questionnaire link through social media platforms such as WhatsApp and Instagram. This approach allowed us to reach a diverse and geographically dispersed audience and obtain a larger sample size for our study.

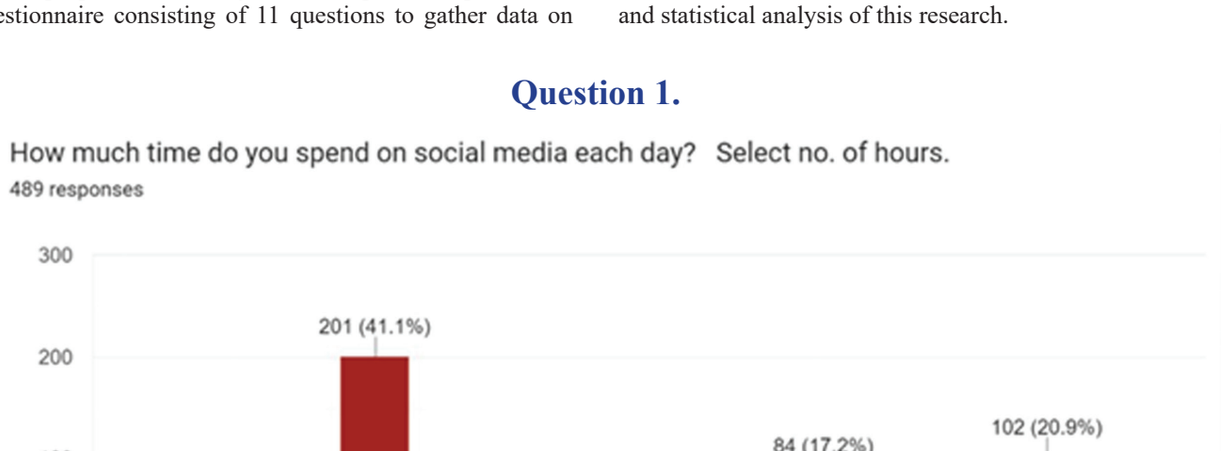
In addition to creating the questionnaire and form, we took several measures to ensure the validity and reliability of the data collected. For instance, we included a variety of question types, such as open-ended and closed-ended questions, to obtain both qualitative and quantitative data. We also tested the questionnaire and form on a small group of participants to identify and fix any technical or conceptual issues before launching it on a larger scale.

Overall, our research methodology and the use of online tools have enabled us to gather a large volume of data from a diverse population in a cost-effective and time-efficient manner.

Results and Discussions

In results and discussions, we will discuss graphical analysis and statistical analysis of this research.

Question 1.

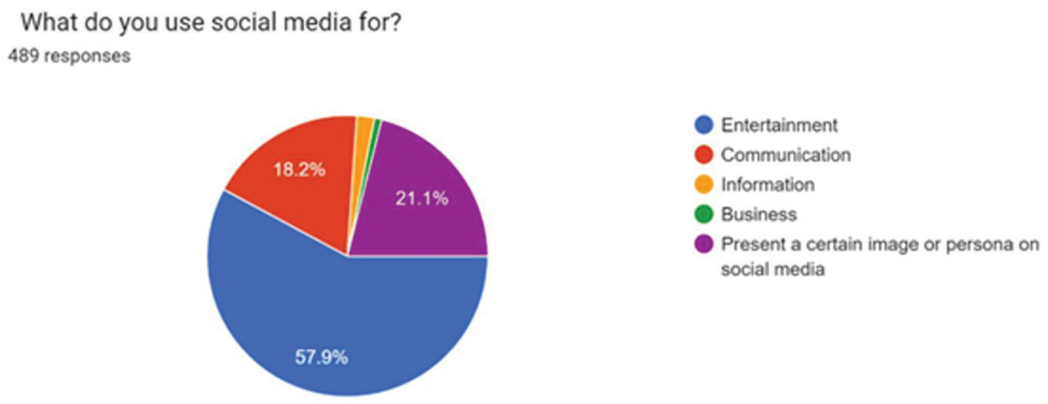


Interpretation

In conclusion, the results of the survey indicate that a considerable proportion of individuals spend a significant amount of time on social media each day. A majority of the participants **(41.1%)** reported spending 3 hours per day on social media, while a significant proportion **(20.9%)** reported spending 9 hours and **(17.2%)** reported spending 7 hours per day.

These findings highlight the prevalence of social media use in modern society and suggest that it has become a significant part of people's daily routines. It is essential to recognize the potential negative impacts of excessive social media use, such as reduced productivity, social isolation, and adverse effects on mental health. Therefore, individuals should be mindful of their social media use and take steps to ensure that it does not interfere with their daily activities and overall well-being.

Question 2.



Interpretation

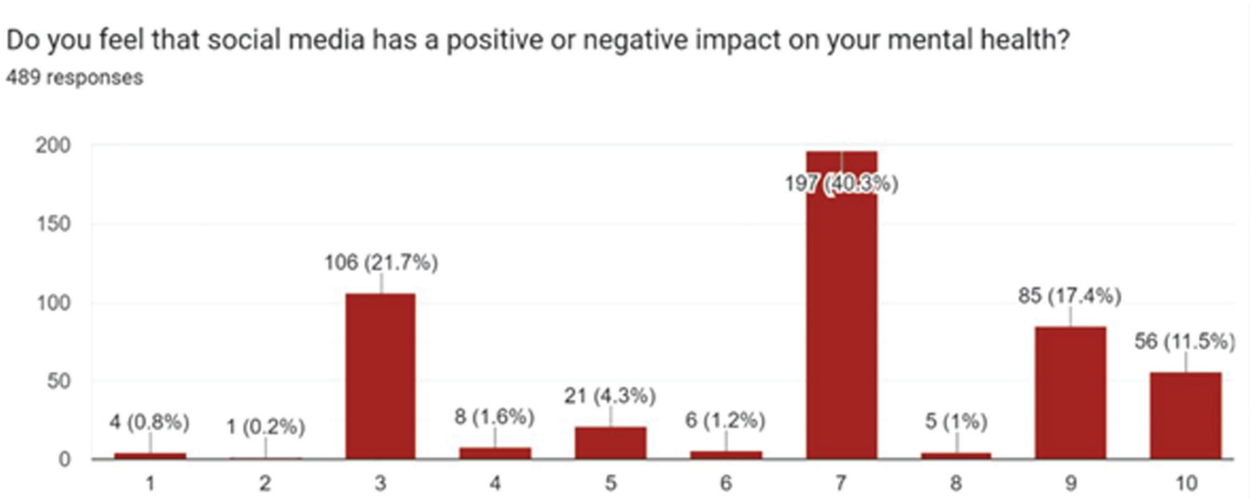
Based on the responses collected from the survey, it can be concluded that the majority of the participants, at **57.9 percent**, use social media primarily for entertainment purposes. Social media platforms offer a wide range of entertainment options, including watching videos, browsing memes, and playing games.

However, a significant proportion of respondents, at **21.1 percent**, reported using social media to present a certain image or persona. This finding highlights the pressure that social media users feel to create and maintain a desirable online persona that can often be very different from their real-life self.

Communication was also reported as a primary use of social media, with **18.2 percent of** respondents indicating that they use social media platforms to communicate with friends, family, and other acquaintances.

Overall, the findings of this survey suggest that social media serves multiple purposes for users, ranging from entertainment to communication to presenting a certain image or persona. However, it is important for individuals to be aware of the potential risks associated with excessive social media use and to strive to maintain a healthy balance in their online activity.

Question 3.



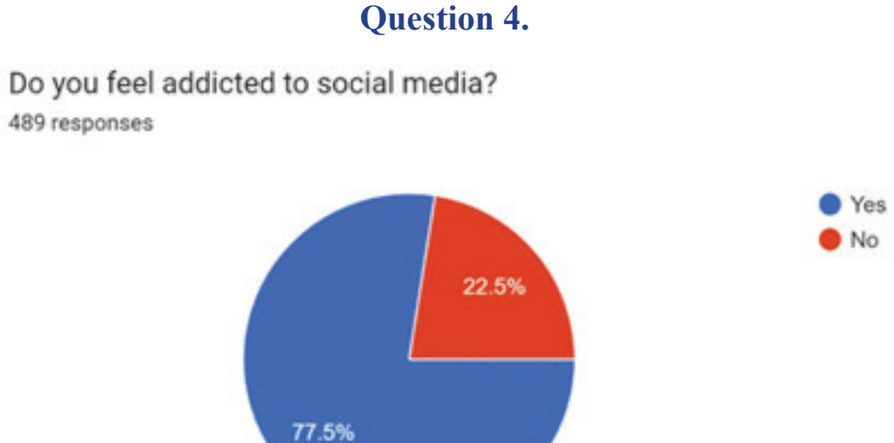
Interpretation

In conclusion, the results of the survey indicate that there is a mixed perception among individuals regarding the impact of social media on their mental health. While a considerable proportion of participants **(40.3%)** reported a neutral stance towards the impact of social media on their mental health, a significant minority **(21.7%)** perceived it as having a positive impact. At the same time, a notable percentage **(28.9%)** perceived social media to have a negative impact on their mental health, with a significant number **(11.5%)** giving it the highest rating on the negative impact scale.

These findings suggest that while social media has become an integral part of modern life and has several benefits such as keeping individuals connected, informed, and entertained, it can also have adverse effects on mental health. Hence, it is crucial to recognize the potential risks associated with

excessive social media use, such as addiction, cyberbullying, anxiety, and depression, and take steps to mitigate them. By being mindful of their social media use and establishing healthy boundaries, individuals can ensure that social media has a positive rather than negative impact on their mental health.

Question 4.



Interpretation

In conclusion, the results of the survey indicate that a considerable majority of individuals **(77.5%)** feel addicted to social media. This finding highlights the potential risks associated with excessive social media use and the need to recognize and address the issue of social media addiction.

It is essential to be mindful of the amount of time spent on social media and establish healthy boundaries to ensure that it does not interfere with daily life activities. Additionally, individuals should take regular breaks from social media and engage in other activities such as physical exercise, reading, or spending time with loved ones. By taking proactive steps to mitigate the risk of social media addiction, individuals can maintain a healthy balance between their online and offline lives and avoid the negative consequences associated with excessive social media use.

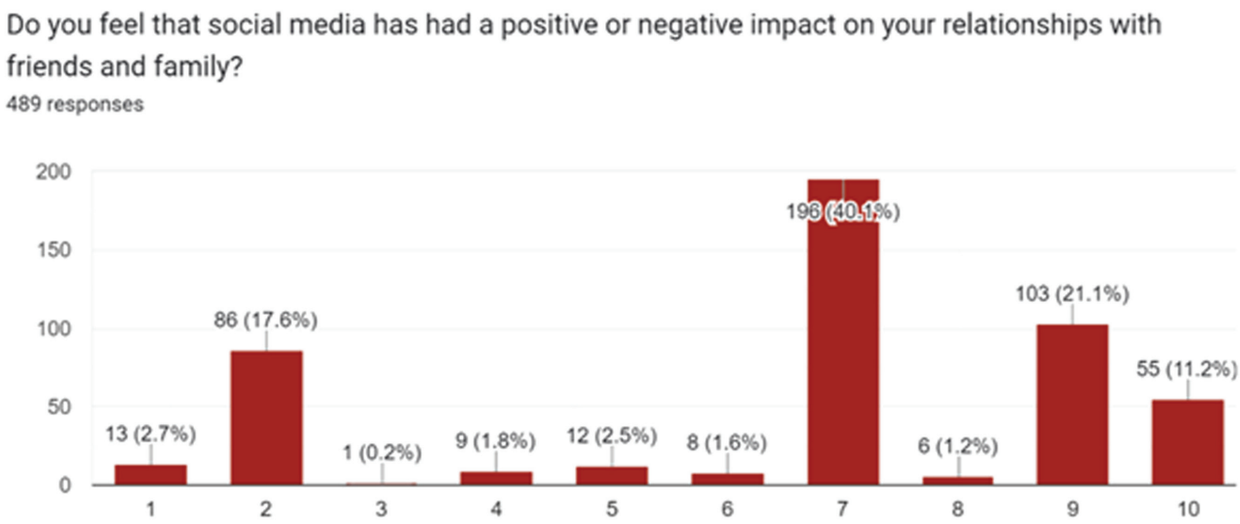
Question 5.

Interpretation

In conclusion, the survey results suggest that individuals have varying opinions regarding the impact of social media on their mental health. While a considerable proportion of participants **(39.7%)** rated their mental health impact as a seven on the scale of one to ten, indicating a moderate impact, a significant minority **(17.3%)** perceived it as having a low impact. At the same time, a notable percentage **(11%)** rated the impact as ten, suggesting a high negative impact on their mental health.

While social media has several benefits, such as staying connected with friends and family and keeping up-to-date with current events, it can also lead to negative outcomes, such as addiction, cyberbullying, and mental health problems.

Question 6.

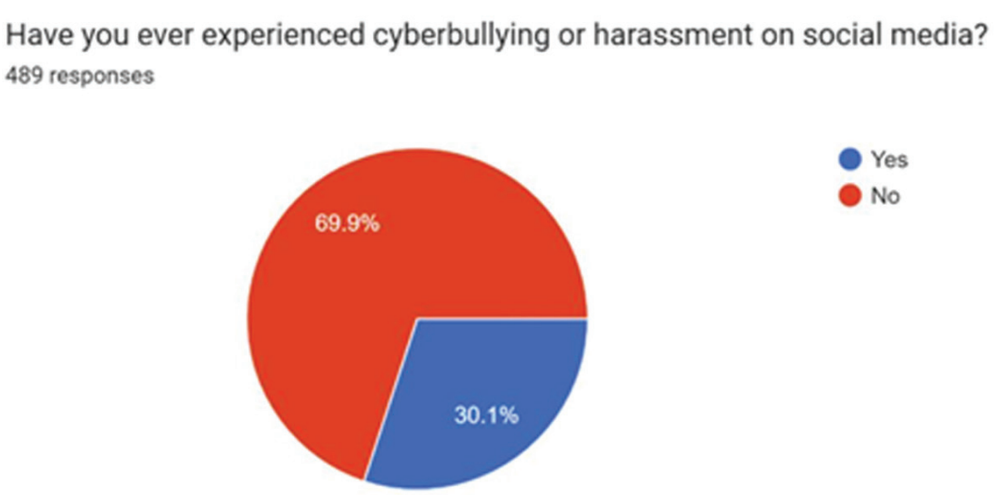


Interpretation

In conclusion, A significant percentage of participants **(40.1%)** perceived social media to have a moderate impact on their relationships with friends and family, while a notable minority **(11.2%)** perceived it to have a highly negative impact. A considerable number of respondents **(21.1%)** also rated the impact as highly positive.

These findings suggest that social media's impact on relationships with friends and family is highly dependent on the individual's usage and the nature of their social media interactions. While social media has several benefits, **misuse can have adverse effects, such as increased feelings of loneliness and isolation**. By being mindful of their social media use, establishing healthy boundaries, and **engaging in more meaningful interactions with friends and family outside of social media**, individuals can ensure that social media has a positive rather than negative impact on their relationships.

Question 7.



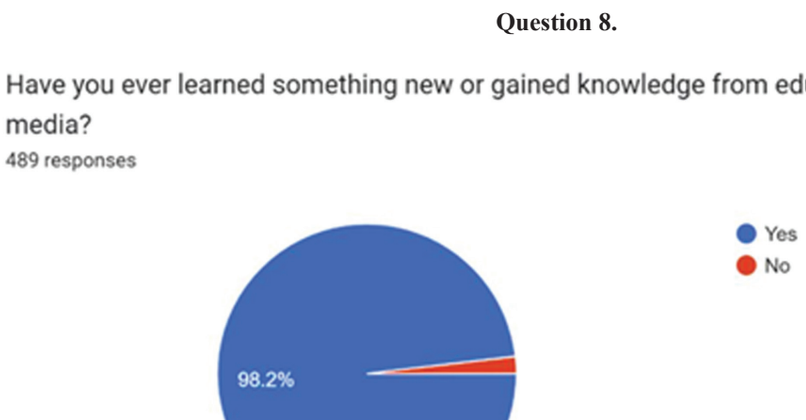
Interpretation

In conclusion, the survey results on cyberbullying and harassment on social media indicate that a significant proportion of individuals **(30.1%)** have experienced such negative behaviour. This finding is concerning and highlights the need for greater awareness and education on how to prevent and respond to cyberbullying and harassment.

It is crucial to recognize that even one instance of cyberbullying or harassment can have a significant and lasting impact on an individual's mental health and well-being. It is, therefore, essential to continue to raise awareness of the issue and promote responsible social media use.

Further research is needed to better understand the prevalence and impact of cyberbullying and harassment on social media and to develop effective strategies to prevent and respond to such negative behaviour. By working together as a society to address this issue, we can create a safer and more positive online environment for all.

Question 8.



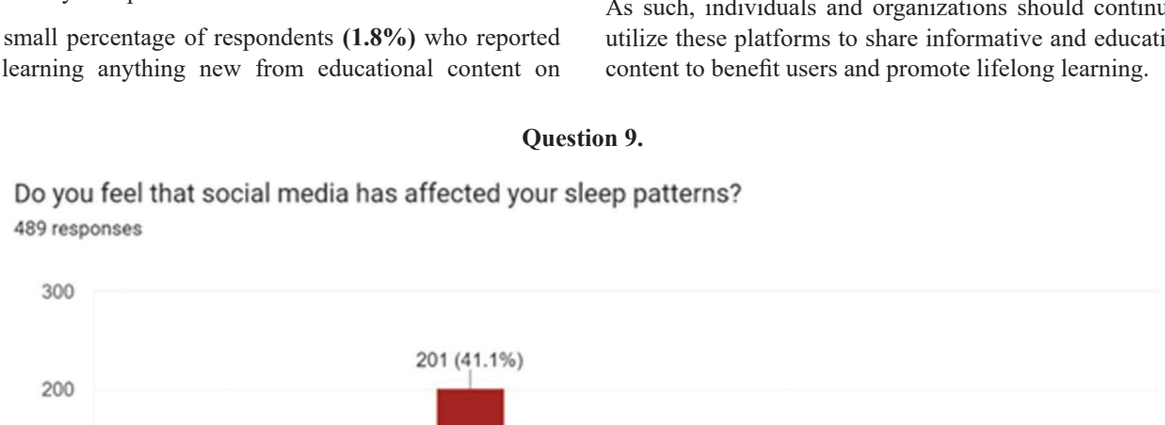
Interpretation

The overwhelming response of **98.2%** of respondents to the question of whether they have learned something new or gained knowledge from educational content on social media is a testament to the potential of these platforms for learning and personal growth. The accessibility and ease of sharing educational content on social media make it an invaluable resource for individuals seeking to expand their knowledge on a variety of topics.

The small percentage of respondents **(1.8%)** who reported not learning anything new from educational content on social media may reflect the need for more diverse and engaging educational content on these platforms. However, it is important to note that social media platforms are not a replacement for traditional sources of education, and individuals must exercise discretion when evaluating the reliability and accuracy of information shared on social media.

Overall, **the results of this survey suggest that social media can be a valuable tool for learning and personal growth**. As such, individuals and organizations should continue to utilize these platforms to share informative and educational content to benefit users and promote lifelong learning.

Question 9.



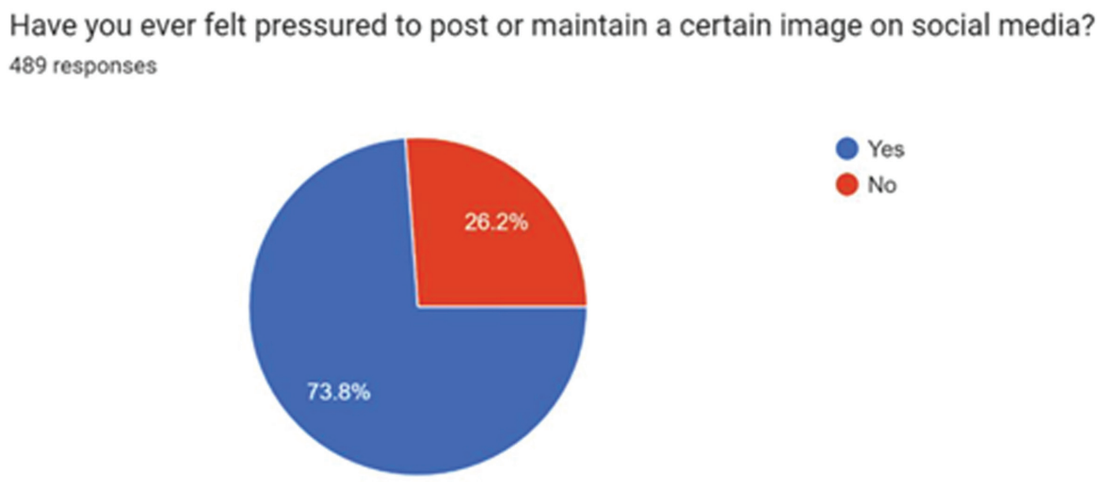
Interpretation

The results of this survey reveal that a significant portion of respondents feel that social media has affected their sleep patterns to some degree. **41.1%** of respondents gave a rating of 4 on a scale of 1 to 10, indicating a moderate level of impact, while **20.9%** of respondents gave a rating of 9, indicating a high level of impact on their sleep patterns.

The negative impact of social media on sleep patterns has been well-documented in research studies, with factors such as blue light exposure, stimulation, and stress being cited as contributing factors. The large percentage of respondents who reported an impact on their sleep patterns in this survey highlights the need for individuals to be mindful of their social media use before bedtime.

Although social media can provide a variety of benefits such as entertainment, social connection, and access to information, individuals must recognize the potential negative consequences that excessive or poorly timed social media use can have on their sleep and overall well-being. **To mitigate the negative effects of social media on sleep, individuals should aim to establish healthy social media habits, such as setting limits on usage before bedtime and using features such as "Do Not Disturb" mode to minimize disruptions.**

Question 10.



Interpretation

The results of the survey indicate that a significant majority of respondents, **73.8** percent, have felt pressured to post or maintain a certain image on social media. This pressure can be attributed to the desire to fit in or to present oneself in a certain way to friends and followers. The constant exposure to carefully curated and edited images on social media platforms can contribute to this pressure.

While **26.2** percent of respondents indicated that they had not felt such pressure, it is important to note that the pressure to **conform to societal expectations** on social media is a growing concern.

This pressure can have a negative impact on mental health and self-esteem. As such, **it is important to continue exploring this issue and to find ways to promote a healthier relationship with social media.**

Question 11.

What steps do you think can be taken to mitigate the potential negative impact of social media on youth?

(It was an optional question)

Where these responses were recorded: -

- Limit the time spent on social media.
- Try to use the social media less and start using it for increasing your productivity.
- Do not just do things to show off on social media, in reality Nobody Cares! Just Make a routine of using social media for fixed number of hours and do career related stuff instead!
- Manage our time.
- Manage the time spent and content consumed on social media.
- Managing your time by yourself or act for yourself to reduce the negative impact of social media you have in your or others life.
- Simple just uninstall the apps and government should get them ban.
- Set time limit on the particular social media app.
- Limit mobile usage.
- Uninstall apps set timers and blockers.
- Setting a time limit.
- Use only for minimum time, only when needed.
- By focusing on real world.
- Use wisely. It solely depends upon the user and the user's friend circle.

- Learn to control yourself and put down your phone before sleeping and do not pick it up as soon as you wake up. Discipline plays a big role in it.
- Use it being conscious of not wasting time in it.

Interpretation

The responses to the optional question on mitigating the potential negative impact of social media on youth suggest that there are several steps that can be taken to reduce the negative effects. The most common suggestion was to **limit the time spent on social media, either by setting a time limit or by uninstalling apps.** Other suggestions include using social media more productively, focusing on real-world activities, managing time and content consumption, and developing self-discipline. [6][7]

It is clear from these responses that users recognize the potential negative impact of social media and are willing to take steps to mitigate these effects. It is important to note that the responsibility lies not only with individuals but also with social media platforms and governments to implement measures that can reduce the negative impact of social media on youth. [8]

Conclusion

To conclude, social media benefits in both positive and negative means. It does not force an individual to get addicted to a specific feature, brand or idea, but rather provides him with all the things and lets him choose the desired one. Interest based content and preferred advertisement are there to make people crazy about certain products. To put in a nutshell, social media retains the flexibility and urges people to enhance it according to their taste.

References

1. J. Nesi, “The Impact of Social Media on Youth Mental Health: Challenges and Opportunities,” N. C. Med. J., vol. 81, no. 2, pp. 116–121, 2020, doi: 10.18043/ncm.81.2.116.
2. P. U. Rani and Padmalosani, “Impact of social media on youth,” Int. J. Innov. Technol. Explor. Eng., vol. 8, no. 11 Special Issue, pp. 786–787, 2019, doi: 10.35940/ijitee.K1138.09811S19.
3. A. Marchant et al., “A systematic review of the relationship between internet use, self-harm and suicidal behaviour in young people: The good, the bad and the unknown,” PLoS One, vol. 12, no. 8, pp. 1–26, 2017, doi: 10.1371/journal.pone.0181722.
4. M. D. Siebert, “The Silent Classroom: The Impact of Smartphones and a Social Studies Teacher’s Response,” Soc. Stud., vol. 110, no. 3, pp. 122–130, 2019, doi: 10.1080/00377996.2019.1580666.
5. F. A. Rostam, “The negative impact of social media on youth,” vol. 5, no. January, pp. 4–5, 2020.
6. M. L. Birnbaum, K. Candan, I. Libby, O. Pascucci, and J. Kane, “Impact of online resources and social media on help-seeking behaviour in youth with psychotic symptoms,” Early Interv. Psychiatry, vol. 10, no. 5, pp. 397–403, 2016, doi: 10.1111/eip.12179.
7. S. A. Sumner, D. A. Bowen, and B. Bartholow, “Factors Associated with Increased Dissemination of Positive Mental Health Messaging on Social Media,” Crisis, vol. 41, no. 2, pp. 141–145, 2020, doi: 10.1027/0227-5910/a000598.
8. P. Jain, “Impact of Social Networking Sites (SNS) on The Youth of India,” 2012. [9] E. S. Scott, C. Canivet, and P. O. Östergren, “Investigating the effect of social networking site use on mental health in an 18–34 year-old general population; a cross-sectional study using the 2016 Scania Public Health Survey,” BMC Public Health, vol. 20, no. 1, pp. 1–11, 2020, doi: 10.1186/s12889-020-09732-z

Parichay Maharaja Surajmal Institute Journal of Applied Research

Education and Human Rights

The Evolution of Human Rights and Their Socio-Cultural Implications

Dr. (Mrs.) Rajesh Gill[1]

Abstract

The principle that all individuals are born with inherent freedoms and equal in dignity and entitlement to certain rights, regardless of factors such as religion, race, caste, gender, or nationality, is a widely accepted understanding of human rights. These rights are universal and serve as a reflection of the essential dignity of every human being. Central to the concept and movements surrounding human rights is the need to raise awareness against exploitation and oppression, as well as to mobilize efforts to realize these fundamental rights. Therefore, a primary contemporary concern revolves around the question of how to ensure that each citizen is informed about and capable of advocating for human rights, both for the betterment of individuals and the broader community. Education emerges as a critical instrument in achieving this objective. It is imperative to recognize Human Rights Education (HRE) as a purposeful, participatory approach designed to empower individuals, groups, and communities by fostering knowledge, skills, and attitudes aligned with internationally recognized principles. This paper underscores the idea that if we are genuinely concerned about our society and the preservation of its culture, we must educate our society about its human rights.

Top of Form

Introduction

The inherent dignity and equality of all human beings at birth form the bedrock of human rights, representing fundamental values that transcend the boundaries of diverse civilizations. Our world is characterized by a rich tapestry of cultures, each with its unique way of life, customs, and adaptations to the environment. However, amidst this diversity, there exists a common thread, a set of shared principles that underpin the core of human civilization and rights. These rights hold a place of profound significance in the hearts of individuals worldwide, transcending geographical and cultural divides.

Within the realm of human rights, we encounter a distinction between inherent rights, those innate to our very humanity, and legal rights, which are codified within the legal systems of nations and the international community. The term 'human rights,' as expounded in a UNESCO publication titled "Human Rights" (1996), underscores the idea that every person is born with an equal measure of dignity and entitlement to rights. These rights are not mere legal constructs; they are moral claims rooted in the essence of being human.

Over time, these moral claims have been translated into concrete legal rights through the evolving processes of societal development, both at the national and international levels. This evolution reflects the ongoing commitment of societies to uphold and safeguard the principles encapsulated within the concept of "human rights."

Top of Form

a) A Holistic Perspective on Human Rights: Individual Rights, Free from Interference

Human rights are not merely confined to individual rights, which are the entitlements possessed by each person without undue interference from others. These rights emphasize the intrinsic value and dignity of the individual.

b) Social Rights: Rights Held by Collectives and Defined by the State

In addition to individual rights, human rights also encompass social rights, which pertain to groups and are defined and safeguarded by the state. These rights recognize the importance of collective well-being within society.

c) International and Global Rights: Universal Rights Enforcing the Idea of Human Unity

Furthermore, human rights extend to international and global dimensions, emphasizing the universality of these rights and reinforcing the concept of the unity of humanity. They transcend borders and apply to all groups, underscoring our shared human identity.

It is essential to acknowledge that rigidly categorizing human rights into distinct groups is not always practical, as many rights intersect and overlap. Macfarlane aptly asserts that all human rights possess a universal character, belonging to every individual, irrespective of factors such as caste, creed, historical context, or prevailing circumstances. These rights uphold the principle of individual equality and

[1] *Assistant Professor, Department of Education, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

are of paramount importance, as they cannot be arbitrarily deprived.

Human rights are not mere theoretical constructs; they hold practical significance and are enforceable in various ways. Given their paramount nature, they serve as a potent source of inspiration, contributing to the well-being, happiness, and contentment of individuals. In essence, human rights ensure that the fundamental needs, desires, values, ideals, and aspirations of individuals receive the recognition they deserve, a fundamental characteristic of any democratic society.

Evolution

Throughout history, numerous prominent poets, philosophers, politicians, and thinkers tirelessly advocated for the recognition of human dignity and equality. It was an era when ideologies like Mussolini's Fascism in Italy and Hitler's Nazism in Germany demonstrated flagrant disregard for human rights. Similarly, in the communist regime of the USSR, individual freedoms were often sidelined. Amidst these tumultuous times, the Second World War played a pivotal role in reshaping the discourse on human rights. In 1941, Franklin D. Roosevelt, the President of the United States, boldly declared that the four essential freedoms – freedom of speech, freedom of worship, freedom from want, and freedom from fear – were indispensable guarantees for global peace.

This historical backdrop set the stage for the eventual declaration of human rights. On December 10, 1948, the United Nations General Assembly passed the Universal Declaration of Human Rights. This significant document was crafted over a span of two years, from January 1947 to December 1948, culminating in its adoption by the General Assembly. Since then, December 10 has been celebrated worldwide as Human Rights Day.

Originally consisting of 18 member states, the Human Rights Commission has since expanded to include 53 members who convene annually in Geneva to address human rights issues, develop and amend international standards, and provide recommendations. While the Universal Declaration itself does not possess the legally binding force of a treaty, it has achieved universal recognition and acceptance. This foundational declaration encapsulates human rights in 30 succinct articles, all grounded in the fundamental principle that human rights derive from the "inherent dignity" of every individual.

Top of Form

Social and Cultural Implications

Now, let's delve into the crucial role that education plays in not only imparting and safeguarding human rights but also in preserving socio-cultural unity and promoting the well-being of both individuals and societies.

Education serves as the linchpin for the development and advancement of fundamental human rights. It stands as a primary tool for the promotion of human rights values. Article 26 of the Universal Declaration of Human Rights underscores this role, stating that "Education shall be directed to the full development of the human personality and to the strengthening of respect for Human Rights and fundamental freedoms. It shall promote understanding, tolerance, and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations."

Education is a lifelong process that encompasses individuals at all stages of development and across all societal strata. It instills in people the imperative of respecting the dignity of others and equips them with the means to ensure such respect is upheld in all societies. In essence, human rights education emerges as an indispensable component of an entire society's fabric, serving as a prerequisite for harmonious and peaceful coexistence.

The significance of human rights education is underscored by the contemporary global landscape, as evident in reports such as the "World Plan of Action on Education for Human Rights and Democracy."

In 1993, UNESCO and the United Nations convened the International Congress on Education for Human Rights and Democracy in Montreal, Canada. This congress led to the adoption of a world plan of action, emphasizing the following principles:

These principles epitomize the commitment to fostering a culture of respect for human rights through education, emphasizing its pivotal role in shaping societies that cherish human dignity, democracy, and peace.It states that:

1. **Democratic Values and Women's Education for Human Rights and Democracy**

The enjoyment of human rights and fundamental freedoms is closely intertwined with the presence of democratic values. It is crucial to emphasize the significance of women's education in the context of human rights and democracy, warranting special attention and focus.

2. **Democratization of the Educational Process for Empowerment**

Education, in itself, should adopt a democratic and participatory approach, empowering both individuals and civil society to enhance their quality of life.

3. **Enhancing Implementation of the World Plan of Action (March 1993) and the United Nations Public Information Campaign for Human Rights**

To effectively implement the World Plan of Action established in March 1993 and the United Nations Public Information Campaign for Human Rights, substantial efforts must be directed towards diversifying information sources, documentation, teaching materials, and learning resources. These efforts should be tailored to meet the practical requirements of teaching and training at various educational levels. Equally important is the reinforcement of existing national, regional, and international information networks, which can be achieved through:

a) Facilitating inexpensive and accessible access to updated information.

b) Implementing straightforward computerization and search systems.

c) Identifying, establishing, and strengthening national, regional, and international research centers and clearinghouses focused on human rights information.

4. Promoting Equality and Preventing Conflicts Through Human Rights Education

Human Rights Education plays a pivotal role in promoting equality, preventing conflicts, and averting violations, thereby contributing to the creation of a society where everyone is valued and respected.

5. The Global Significance of Human Rights Education

Human Rights Education is a global imperative aimed at imparting skills, disseminating knowledge, and shaping attitudes that foster a universal culture of Human Rights. This becomes particularly vital when considered through the "4 A" framework:

- **Availability**: Ensuring that education, as a social and economic right, is accessible to all.
- **Accessibility**: Making every effort to facilitate access to education for all.
- **Acceptability**: Guaranteeing a minimum standard of education quality.
- **Adaptability**: Requiring schools to respond to the unique needs of each individual child, aligning with the Convention on the Rights of the Child.

Integrating Human Rights and Democracy Into Education

Recognizing that human rights cannot exist in isolation, adaptability within education involves safeguarding all human rights while simultaneously enhancing them through the educational process. An integral aspect of this effort is the inclusion of Human Rights and Democracy Education in the curricula at all levels of the educational system:

Establishing a comprehensive and widespread curriculum that permeates various subject disciplines and consistently addresses Human Rights and Democracy Education throughout a person's foundational education. The themes of rights, responsibilities, and democratic processes should be seamlessly integrated into most, if not all, areas of study and instilled as core values within school life and the socialization process.Top of Form

The focus of Human Rights Education should encompass various levels of the educational system and related organizations, including:

- Pre-primary education
- Primary education
- Secondary education
- Vocational training
- Post-secondary colleges and universities
- Teacher training and education programs
- Teacher organizations and unions
- School boards and other levels of education administration
- Parents' organizations

However, there are several obstacles that need to be addressed to ensure the success of Human Rights Education initiatives. These include:

a) The lack of political will among certain parties to prioritize human rights education.

b) Insufficient involvement of target groups in the development and utilization of educational materials, processes, and policies.

c) The need for more extensive training for many participants involved in human rights education.

d) A lack of coordination and cooperation among national, regional, and international levels in implementing human rights education programs.

e) The tendency to conflate human rights education with legal training, potentially limiting its broader impact.

f) The need for a multi-disciplinary approach to effectively address human rights issues.

Recognizing the significant contribution of Human Rights Education, it has been emphasized that schools and communities should collaborate to ensure the promotion of human rights:

- Encouraging interaction among children and youth from diverse ethnic backgrounds.
- Incorporating human rights education within and beyond school curricula.
- Promoting efforts to maintain peace and conflict resolution.
- Developing an understanding of cultural diversities and fostering respect for them.
- Placing greater emphasis on attitude formation.
- Encouraging respect for the ecological and natural environment.
- Promoting a critical and open-minded approach to issues.
- Developing approaches to problem-solving at the local level while adopting a multi-disciplinary approach.
- Giving preference to certain programs in school activities, including oral programs like radio broadcasts, lectures, group discussions, debates, seminars, and written programs such as essay writing competitions, storytelling, and poetry composition, all centred around Human Rights Education.

In summary, the true meaning and purpose of education lie in liberation. Education and awareness-building about human rights lead individuals toward freedom. The World

Conference on Human Rights in Vienna (1993) concluded that human rights are best protected through democracy and development.

This presents a challenge for humanity to construct a peaceful, democratic, prosperous, and just world. Constant and active education and learning are essential to meet this challenge. If we aspire to establish a new and equitable system, we must provide equality in all aspects.

In this context, Human Rights Education plays a critical role in influencing countries and their cultures to respond creatively to the challenges of human rights, giving it the priority it deserves.

In an interdependent and interconnected world, fundamental freedoms are vital for our survival with dignity and self-respect. It is hoped that committed nations, individual groups, every sector of society, and the international community at large will work together to ensure the full success of Human Rights Education for the benefit of future generations.

In conclusion, while progress has been made, there is still much work to be done to ensure that every citizen enjoys their human rights, and education stands as the most powerful tool in this endeavour.

Top of Form

Top of Form

Top of Form

Parichay Maharaja Surajmal Institute Journal of Applied Research

Quality Education as an SDG Goal-Challenges and Actions

Dr. Anita Sharma[1]

Abstract

Education is the backbone of every economy. A nation can achieve the goal of development only when it has a high literacy ratio. Out of the 17 goals for sustainable development, as decided by the General Assembly of the United Nations under the Agenda of 2030 for Sustainable Development, Quality Education is decided to stand as the fourth goal of the agenda. The Sustainable Development Goals (SDGs) along with the fourth goal i.e. Quality Education was put into action from the year 2016. The fourth goal talks not only about education but also emphasizes its quality. It provides an inclusive and egalitarian education and encourages possibilities for lifelong learning. This agenda focuses on fundamentally altering thinking and recognizing the dynamic interconnection between three areas, namely, economic, social, and environmental, to promote integrated and global development in all countries. This is a descriptive research paper. The data used for this paper is secondary. All the data for this paper has been collected through the Internet. The objective of this study is to discuss the need for Education to achieve Sustainable Development and SDGs, Challenges for Higher Education and the SDGs and steps to be taken to meet these challenges and to achieve the goals

Keywords- Sustainable Development Goals (SDGs), Quality Education, Education

Introduction

Education is the backbone of every economy. A nation can achieve the goal of development only when it has a high literacy ratio. Out of the 17 goals for sustainable development, as decided by the General Assembly of the United Nations under the Agenda of 2030 for Sustainable Development, Quality Education is decided to stand as the fourth goal of the agenda. The Sustainable Development Goals (SDGs) along with the fourth goal i.e. Quality Education was put into action from the year 2016. The fourth goal talks not only about education but also emphasizes its quality. It provides an inclusive and egalitarian education and encourages possibilities for lifelong learning. This agenda focuses on fundamentally altering thinking and recognizing the dynamic interconnection between three areas, namely, economic, social, and environmental, to promote integrated and global development in all countries.

Keywords- Sustainable Development Goals (SDGs), Quality Education, Education

Research Methodology

This is a descriptive research paper. The data used for this paper is secondary.All the data for this paper has been collected through Internet.

Objectives

The objective of this study is to discuss the

- Need for Education to Achieve Sustainable Development and SDGs
- Challenges for Higher Education and the SDGs and
- Steps to be taken to meet these challenges and to achieve the goals

Need for Education to Achieve Sustainable Development and SDGs

"Education must, and can contribute to a new vision of sustainable global development". (UNESCO, 2015)

Making the necessary mental and behavioural shifts will be necessary to start along the path to controllable progress. People have to go closer to becoming maintainability change-creators in order to make the world more maintainable and to attract concerns linked to supportability as depicted in the SDGs.

They need the knowledge, skills, dispositions, and mindsets necessary to contribute to economic advancement. As a result, instruction is essential to achieving sustainable improvement. However, a broad training programme does not support reasonable advancement. Training that solely promotes financial growth may also encourage the growth of unsustainable use patterns. With the help of the widely accepted Education for Sustainable Development (ESD) approach, students can make informed decisions and engage in activities that promote environmental responsibility and financial responsibility. Through education, we may achieve

[1] *Associate Professor, Department of Business Administration, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

a great number of extra Sustainable Development Goals (SDGs). People can break the cycle of poverty when they have access to high-quality education. Education can help reduce inequality while also empowering individuals to live healthier, more sustainable lifestyles. Education may also foster tolerance in people and foster a peaceful community.

Education is viewed as UNESCO's top priority since it supports social peace and sustainable development and is a part of fundamental human rights. The UN has a dedicated organization for education that promotes gender equality in education, addresses contemporary global issues, and provides leadership on a regional and international scale (United Nations, 2015). The Agenda of Education 2030 is part of a global initiative to abolish poverty with the help of 17 Sustainable Development Goals by 2030, and it is anticipated that UNESCO, the United Nations institution for education, to lead and assist this initiative.

Challenges for Higher Education and the SDGs

- **Integrating higher education within the new agenda** - The event stressed higher education should not only be considered as one of the targets of SDGs but is to become its integral part. The inclusion of higher education in the agenda was merely a footnote. IAU has been promoting greater acknowledgment of the part that higher education plays in planning, curriculum design, teacher preparation, evaluation and assessment, and IT use research in an effort to assist address this. The inclusion of higher education in the agenda was merely a footnote. IAU has been promoting greater acknowledgment of the part that higher education plays in planning, curriculum design, teacher preparation, evaluation and assessment, and IT use research in an effort to assist address this.
- **Higher Education Institutions Being Active Worldwide** For higher education institutions to participate in the overall SDG agenda and Education 2030, there is a need to improve their knowledge and mobilize them. This is particularly true for universities in developed nations and for people who are unfamiliar with UN rhetoric and policy agenda circles. Higher education administrators in industrialized countries are still not paying enough attention to the SDGs, and if they are, their knowledge of this agenda is frequently restricted to environmental concerns, campus greening, or climate change.
- **Making Goals a Reality -** The third problem involves translating this global agenda's ambitious aims and ambitions into effective and realistic government and institutional policies and activities. Ensure that men and women have equal access to affordable, high-quality postsecondary, technical, and vocational education by the year 2030. It is said that countries need various solutions designed to address their particular challenges and resources if they are to achieve all three of these objectives—access, affordability, and quality. Equal access, for instance, can entail increasing one's physical or intellectual capacity or removing long-standing barriers based on socioeconomic status, language barriers, and physical or mental limitations.

Steps to be taken to meet these challenges and to achieve the goals

Developing a Country-level Grasp

The establishment and understanding of the 2030 agenda among all stakeholders is a prerequisite for translating the global SDG4 commitments. To guarantee that education and other SDGs targets are incorporated in a dual direction, this entails consulting with the education sector as well as other economic and social sectors on the new agenda.

Evaluation of National Preparedness

It is necessary to determine if a nation is prepared to integrate the Sustainable Development Goals into its educational framework. It also identifies the gaps in the national education system's planning, policy, management, and monitoring efforts, as well as the activities necessary to modify or adapt the planning and policy frameworks for the SDGs.

Regulation Context

Determining the national administrative and regulations context in light of the SDGs 2030 agenda entails examining the frameworks related to the legal, administrative, and policy frameworks and being aware of any potential discrepancies between the global commitments and the context of national policy.

Planning Scenario

The entry points that will support the integration and mainstreaming of SDG commitments into the context of national planning in the future must be identified. This can be accomplished with the aid of certain national planning/ policy cycles by creating sub-sector plans or by modifying the current plans for the SDG4 commitments.

Tracking and Assessment

Tracking and assessment of current national commits as well as keeping an eye on the needs of the global indicator for tracking SDG4 development are all part of this process.

Efficient Management

For the SDGs 2030's Education goals to be inclusive, system-wide, and transparent, sector processes and structures must be coordinated. To ensure cooperation and attempts to examine SDG4 commitments, partner dialogues should also be set up.

Conclusion

Out of the 17 goals for sustainable development, as decided by the General Assembly of the United Nations under the Agenda of 2030 for Sustainable Development, Quality Education is decided to stand as the fourth goal of the agenda. The Sustainable Development Goals (SDGs) along with the fourth goal i.e. Quality Education was put into action from the year 2016. Though there are various challenges that are to be faced in implementing the goal of quality education as we all know there is always a way out to overcome the challenges here are some of the actions that can be taken to move ahead and achieve our goal.

References

1. https://www.iiep.unesco.org/en/three-challenges-higher-education-and-sdgs-3556
2. https://www.unesco.org/gem-report/en/monitoring-sdg4
3. https://sdgs.un.org/publications/indicators-and-monitoring-framework-sustainable-development-goals-17958
4. https://www.iied.org/sites/default/files/pdfs/migrate/17739IIED.pdf
5. https://www.thehindu.com/opinion/op-ed/aligning-higher-education-with-the-united-nations-sdgs/article67390357.ece

Parichay Maharaja Surajmal Institute Journal of Applied Research

Transforming Intelligence: A Comprehensive Review of Tiny Machine Learning (TinyML)

Mr. Sundeep Kumar[1]

Abstract

Tiny Machine Learning (TinyML) stands at the intersection of AI and embedded systems, epitomizing a paradigm shift in intelligent computing. In this review paper, we explores the profound impact of TinyML, delving into its hardware and software requirements, diverse applications, inherent benefits, existing constraints, and the transformative potential it holds for the future of smart technologies.

Introduction

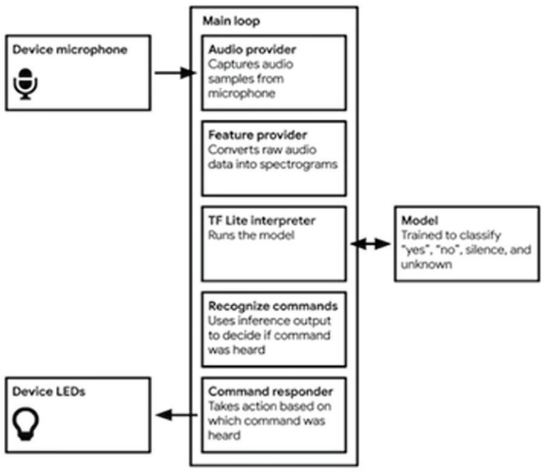
State-of-the-art deep learning AI systems usually demand extensive resources, such as large labeled datasets, significant computational power, and expertise from multiple AI specialists, for both training and inference processes [(1)]. This poses a challenge for deploying these potent AI systems on edge devices. In the contemporary landscape of AI, the integration of ML algorithms with edge devices has become a pivotal focus. TinyML, is a revolutionary paradigm, transcending the boundaries of traditional computing. TinyML is represents an embedded ML technique that facilitates the deployment of ML applications on various affordable, resource- and power-limited devices [(2)].

This approach addresses minor issues that have the potential to create innovative opportunities across various technology fields. Its decentralized nature safeguards data privacy from the outset and operates efficiently on low power, enabling battery-powered usage. Moreover, it allows rapid testing and deployment. TinyML demands integrated solutions covering hardware, system, software, and application aspects, incorporating ML architectures, techniques, tools, and approaches capable of conducting on-device analytics at the cloud's extreme edge [(3)]. TinyML can be utilized in energy-efficient systems like sensors or microcontrollers to execute automated functions [(3)].

Major Applications of TinyML

In the modern era, TinyML is part of our daily life, either we realize it or not. There are more than 3 billion small devices that are based on ML models [(1)]. TinyML involves processing time-series data directly from sensors in real-time. TinyML techniques have found successful applications in various commercial products, deployed in domestic, office, and industrial settings [(4, 5)].

1. **Keyword Spotting:** There is an audio wake-word detection model implemented in Google, iOS and Android devices which turn on these device upon hearing these words, 'OK Google', 'Hey Siri', 'Alexa' [(4)].



Components for a wake-word application. Image used courtesy of Zhitong Yan and Zhuowei Han

2. **Visual Wake Word:** This technique expands on keyword spotting for images and has been adopted in various applications available in the market that utilize the visual wake word technique. Example Google Lens. Other common applications include camera sensors capable of detecting people in a room. Such systems can automatically adjust lighting by turning it off when no person is detected, or they can be employed for security purposes [(5)].

3. **Anomaly Detection:** This technique is utilized to identify unexpected events. The anomaly detection technique is based on an unsupervised learning approach, wherein the model must identify patterns within unlabeled data. This technique is primarily used in industries to detect malfunctioning on factory machines [(5)].

[1] *Assistant Professor, Department of Computer Application, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

Key Industries Served by TinyML

TinyML applications extend across various sectors, particularly those reliant on IoT networks and data [6]. Common applications of TinyML include computer vision, visual wake words, keyword spotters, predictive maintenance, gesture recognition, and industrial machine maintenance, among others, catering various markets/ industries.

Agriculture: TinyML devices enable the real-time monitoring and collection of agricultural and livestock data. TinyML applications in agriculture involve analyzing data from sensors and drones to monitor soil quality, crop health, and pest infestations. Imagimob, a Swedish edge AI product company, has developed a ML platform for edge devices. More than 50 organizations across the Europe have partnered with Imagimob to explore how TinyML technique can facilitate effective management of crops and livestock [6].

Predictive Maintenance in Manufacturing: TinyML enables predictive maintenance solutions in manufacturing equipment. By analyzing sensor data locally, it predicts machinery failures before they occur, minimizing downtime and optimizing maintenance schedules. TinyML can be implemented on low-powered devices to conduct continuous monitoring of machines, identifying malfunctions and predicting issues before they occur. Example is Ping Service, developed a monitoring device designed to consistently analyze the acoustic patterns of wind turbine blades, alerting users to any alterations or damage detected [6].

Customer Experience: To offer personalized services to their customers, companies need to understand better their customers' behavior to target them with personalized ads and messages. TinyML applications empower enterprises to understand user contexts, encompassing their behaviors and interactions [6].

Environmental Monitoring and Conservation: TinyML equipped sensors are deployed in environmental monitoring systems to track air quality, detect forest fires, and monitor wildlife behavior. This data aids conservation efforts and facilitates rapid response to environmental threats [7].

Gesture Recognition in Human-Computer Interaction: TinyML powers gesture recognition interfaces in applications such as gaming consoles and virtual reality systems. By interpreting hand gestures, it enhances user experience, making interactions intuitive and immersive [8].

Tools Required for TinyML

TinyML's unmatched prowess lies in its nuanced interplay between specialized hardware and optimized software architectures. A meticulous dissection of the hardware requirements reveals the intricacies of microcontrollers, their limited computational resources, and the integration of purpose-built accelerators.

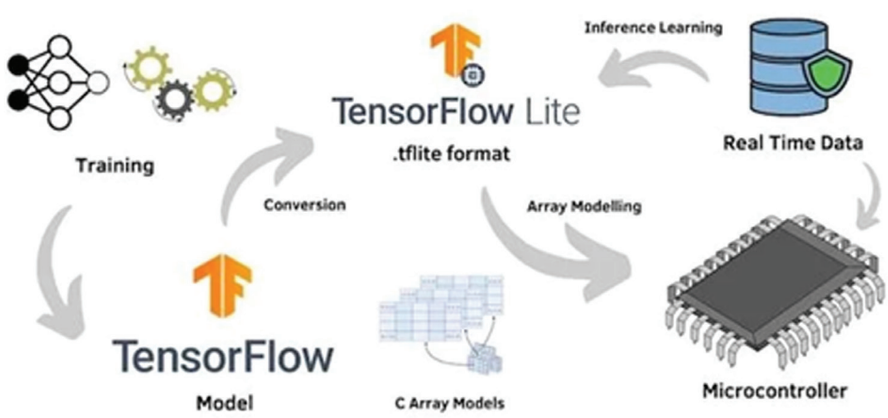
Simultaneously, the software landscape unfolds, exploring the nuances of model quantization, and compression algorithms, orchestrating a symphony of efficiency that allows sophisticated ML models to operate within the confines of miniature devices.

Microprocessors: TinyML devices are equipped with MCUs and digital signal processors (DSPs) to meet 1 mW objectives. The devices are typically Cortex-M based, featuring limited RAM, comparable flash storage, and clock rates ranging in the tens of MHz [9].

Batteries: According to Pete Warden, widely accepted founder of TinyML, the objective for TinyML should be achieving an energy usage level below 1 mW. This particular value is chosen because a consumption of 1 mW enables a device to operate for several months to a year on a standard coin battery. There are a few options such as small Li-Po batteries, coin batteries, and energy harvesting devices when selecting power sources for TinyML applications [9].

Python: Python is preferred language, having various libraries and frameworks, to build ML models, for example TensorFlow, PyTorch, Keras. However C, C ++, or Java to build ML models can be utilized for the same [5, 9].

TensorFlow: This is an open source ML framework developed by Google, having a Python front-end with optimized C++ code at the core. It provides pre-trained ML models designed for everyday use. With Tensorflow Lite, ML models can be created without connecting to the Internet [4, 8]. TF Lite Micro is utilized for data acquisition, preprocessing, model architecture, training, evaluation, optimization and quantization [4].



The TensorFlow Lite Micro workflow. Image used courtesy of Saumitra Jagdale

Apart from theses, sensors, (camera, microphone, etc.) and Bluetooth Low Energy (BLE) connectivity components are also available in TinyML devices [9].

Advantages of TinyML

TinyML offers a multitude of advantages, reshaping the landscape of intelligent computing:

Cost effective: TinyML devices operate on affordable microcontrollers, utilizing small batteries and ensuring minimal power consumption [4].

Real-time Processing: Empowering devices with instantaneous decision-making capabilities, fostering applications where split-second responses are quintessential.

Energy Efficiency: By minimizing data transmission to external servers, TinyML devices conserves energy, extending device battery life and reducing overall power consumption in various applications. Solutions based on MCUs consume significantly lower power even under heavy workloads [9].

Data Privacy and Security: Local data processing enhances privacy by reducing reliance on cloud-based services, thereby mitigating potential security risks associated with data transmission over networks [4].

Key Challenges

While TinyML holds immense promise, it is not without challenges.

Heterogeneity in Tools: The TinyML domain, akin to the IoT sector, encompasses diverse hardware components and algorithms, posing challenges in understanding the tradeoffs between various TinyML implementations [9].

Battery Power Consumption: Under optimal circumstances, a 2Ah battery capacity should ideally sustain a lifespan exceeding ten years, assuming a power consumption rate below 12µA. However, in real-world scenarios, the cumulative current consumption rises to approximately 176.4 mA, significantly diminishing the battery's longevity[2].

Conclusion

In recent years, TinyML has garnered momentum in diverse industries, thanks to the evolution of supportive hardware and software ecosystems and also has more potential to unlock an entire new realm of smart applications in industrial and consumer sectors [4, 9]. Its ability to process complex algorithms on devices with minimal resources opens avenues for innovation in healthcare, industrial automation, smart homes, and beyond. TinyML stands as a testament to human ingenuity, unraveling the boundless possibilities of intelligent computing in a miniature world.

References

1. https://www.thoughtworks.com/en-in/insights/blog/machine-learning-and-ai/tinyml-the-next-big-thing
2. TinyML: Tools, Applications, Challenges, and Future Research Directions, Mar 23, 2023, by Rakhee Kallimani, Krishna Pai, Prasoon Raghuwanshi, Sridhar Iyer and Onel L. A. López
3. https://medium.com/tech-cult-heartbeat/what-is-tinyml-and-why-does-it-matter-f5b164766876
4. https://www.allaboutcircuits.com/technical-articles/what-is-tinyml/
5. TinyML: From Basic to Advanced Applications, June 21, 2021, by Marc Monfort Grau
6. https://www.datacamp.com/blog/what-is-tinyml-tiny-machine-learning
7. How TinyML Can be Leveraged to Solve Environmental Problems: A Survey, Nov 2022, by Hatim Bamoumen, Anas Temouden, Nabil Benamar, Yousra Chtouki
8. https://www.hackster.io/leonardocavagnis/gesture-recognition-tinyml-for-8-bit-microcontroller-1cb0a8
9. https://www.artiba.org/blog/tinyml-the-future-of-machine-learning

Parichay Maharaja Surajmal Institute Journal of Applied Research

A Study of Machine Learning Applications in the Real World and Research Directions

Hemendra Kumar[1]

Abstract:

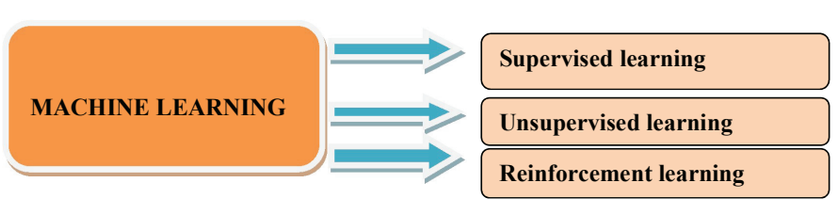
Machine learning (ML) has emerged as a transformative technology with far-reaching implications across various domains. This research article delves into the applications of machine learning in real-world scenarios and explores the current landscape, challenges, and potential research directions to further advance the field. The study covers applications in Education, healthcare, finance, transportation, marketing, and manufacturing, while also addressing challenges related to data privacy, model interpretability, and fairness.

Key words: Machine learning, data privacy, transformative technology

Introduction

The rapid growth of machine learning in recent years has led to groundbreaking applications that have reshaped industries and everyday life. Despite the progress, a gap persists between academic research and practical implementations. This article aims to bridge this gap by providing a comprehensive analysis of machine learning applications in real-world settings. Machine learning continues to play a pivotal role in advancing technology, automating complex tasks, and making data-driven predictions and decisions in various industries. The field is dynamic, with ongoing research and development pushing the boundaries of what is possible with intelligent systems. The primary goal of machine learning is to enable computers to learn from data and improve their performance over time. This learning process involves the identification of patterns, relationships, and insights within the data, allowing the system to make predictions, classifications, or decisions.

Fig 1: Types of machine learning



a. For fraud detection, algorithmic trading, and risk management. We examine how ML models contribute to decision-making processes in financial institutions.

b. **Transportation: Supervised Learning:** In supervised learning, the algorithm is trained on a labelled dataset, where the input data is paired with corresponding output labels. The model learns to map the input data to the correct output by generalizing from the labelled examples. This type of learning is commonly used for tasks such as image recognition, speech recognition, and regression analysis.

c. **Unsupervised Learning:** Unsupervised learning involves training the algorithm on an unlabeled dataset, and the system must find patterns and structures within the data without explicit guidance. Clustering and dimensionality reduction are common applications of unsupervised learning, helping to identify inherent relationships and groupings within the data.

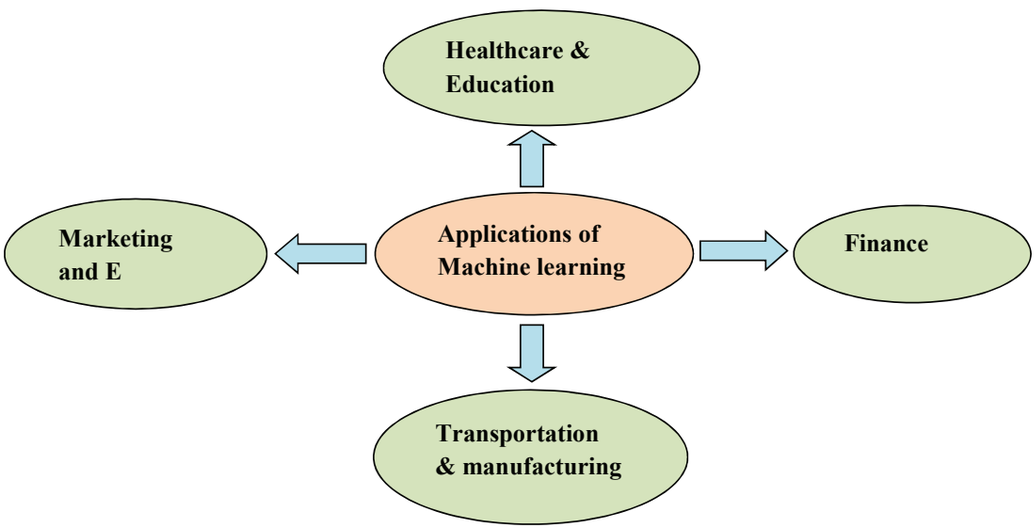
d. **Reinforcement Learning:** Reinforcement learning involves an agent that learns to make decisions by interacting with an environment. The agent receives feedback in the form of rewards or penalties based on its actions, allowing it to learn optimal strategies over time. Reinforcement learning is often used in applications such as game playing, robotics, and autonomous systems.

[1] *Assistant Professor, Department of Computer Application, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

Real-World Applications of Machine Learning:

Machine learning techniques are applied in various domains, including finance, healthcare, marketing, natural language processing, and more. The availability of large datasets, powerful computing resources, and advances in algorithms have contributed to the rapid growth and application of machine learning in real-world scenarios.

Fig 2: Applications of Machine learning



a. Healthcare:

Machine learning applications in healthcare have revolutionized disease diagnosis, personalized medicine, and health monitoring. This section explores recent developments and their impact on patient care.

b. Finance:

In the finance sector, machine learning is employed

Autonomous vehicles, traffic optimization, and predictive maintenance are key areas where machine learning is making significant strides. This section explores the role of ML in shaping the future of transportation.

c. Marketing and E-commerce:

Recommendation systems, customer segmentation, and demand forecasting are critical in marketing and e-commerce. We investigate the impact of machine learning on enhancing user experience and driving business growth.

d. Manufacturing:

Predictive maintenance, quality control, and supply chain optimization are vital for efficiency in manufacturing. This section explores how machine learning is transforming traditional manufacturing processes.

Machine Learning Applications in Research Directions

Machine learning (ML) has found applications in a wide range of research directions, contributing to advancements in various fields. Here are some notable research directions where machine learning plays a crucial role:

a. Biomedical Research:

Disease Diagnosis and Prediction: ML models analyze medical data to assist in the early diagnosis and prediction of diseases, such as cancer, diabetes, and neurodegenerative disorders.

b. Drug Discovery: ML is used to predict potential drug candidates, identify drug interactions, and optimize drug design, significantly accelerating the drug discovery process.

c. Climate Science: Climate Modeling and Prediction: ML techniques are applied to analyze large-scale climate data, improve climate models, and enhance the accuracy of weather and climate predictions.

Natural Disaster Prediction: ML algorithms help predict and mitigate the impact of natural disasters, such as hurricanes, earthquakes, and floods, by analyzing historical data and identifying patterns.

d. Material Science: Material Discovery: ML is employed to predict the properties of new materials, accelerating the discovery of novel materials with specific characteristics for various applications, including electronics and energy storage.

e. Genomics and Bioinformatics: Genomic Data Analysis: ML is used for analyzing genomic data, identifying genetic markers, understanding gene expression patterns, and predicting disease susceptibility.

f. Astrophysics: Galaxy Classification: ML algorithms assist in the automated classification of galaxies, helping astronomers analyze large datasets from telescopes and observatories. Exoplanet Discovery: ML is applied to detect exoplanets in astronomical data, facilitating the identification of potential habitable planets.

g. Social Sciences: Behavioral Analysis: ML models analyze social media data, survey responses, and other sources to understand human behaviour, sentiment, and trends.

Economics and Finance: ML is used for predicting financial market trends, risk assessment, and fraud detection in banking and finance.

f. Computer Vision and Image Processing:

(i) **Object Recognition and Tracking:** ML algorithms are applied to analyze images and videos for object recognition, tracking, and scene understanding, with applications in robotics, surveillance, and autonomous vehicles.

(ii) **Medical Image Analysis:** ML aids in the interpretation of medical images, such as MRI and CT scans, assisting in the diagnosis of various medical conditions.

(iii) **Natural Language Processing (NLP):** Language Understanding: ML techniques power advancements in NLP, enabling machines to understand and generate human-like language. Applications include machine translation, sentiment analysis, and chatbots.

g. Environmental Science:

Ecological Modelling: ML models analyze ecological data to understand and predict changes in ecosystems, biodiversity, and the impact of human activities on the environment.

h. Education and Learning Sciences:

(i) **Personalized Learning:** ML is applied to tailor educational content based on individual student needs, preferences, and learning styles.

(ii) **Predictive Analytics for Student Performance:** ML models predict student outcomes and identify potential interventions to improve educational outcomes.

These examples highlight the diverse and impactful applications of machine learning across various research domains, showcasing its potential to accelerate discoveries, enhance predictions, and provide valuable insights in the scientific community.

Applications of Machine Learning in the Field of Education

In the field of education, machine learning (ML) applications are making significant contributions to enhance learning experiences, optimize educational processes, and improve outcomes. Here are some notable applications of machine learning in education:

Personalized Learning

a. ML algorithms analyze individual student data, including learning styles, preferences, and performance history, to tailor educational content. This personalization helps students learn at their own pace and in ways that suit their unique needs.

b. Adaptive Learning Platforms: ML is used to create adaptive learning platforms that dynamically adjust the difficulty and content of lessons based on a student's progress. These platforms can provide targeted support for areas where a student may be struggling.

c. Predictive Analytics for Student Performance: ML models predict student outcomes by analyzing historical data, identifying patterns, and assessing various factors affecting academic success. Early identification of at-risk students allows for timely interventions and support.

d. Intelligent Tutoring Systems: ML-powered intelligent tutoring systems provide personalized guidance and support to students. These systems adapt to individual learning styles, provide instant feedback, and offer additional resources based on a student's performance.

e. Automated Grading and Assessment: ML algorithms automate the grading process, saving educators time and allowing for more efficient feedback delivery. This is particularly useful for handling large class sizes and repetitive assessments.

f. Natural Language Processing (NLP) for Language Learning: ML, especially NLP, is applied to language learning platforms to improve speech recognition, language translation, and the understanding of context in written and spoken language. This enhances language learning experiences.

Learning Analytics

ML is used to analyze vast amounts of educational data, including student interactions with online resources, to gain insights into learning patterns, preferences, and areas that may need improvement. This information can inform instructional design and curriculum development.

a. Automated Recommendation Systems: ML-driven recommendation systems suggest relevant educational resources, courses, and materials based on a student's past activities, preferences, and academic goals. This helps students discover and engage with content that aligns with their interests.

b. Fraud Detection and Plagiarism Prevention: ML algorithms can detect anomalies in student behaviour, helping to identify instances of academic dishonesty, plagiarism, or fraudulent activities in online assessments.

c. Facilitating Teacher Professional Development: ML can be used to analyze teaching methods and strategies, providing insights into effective practices. This information can support teacher professional development programs.

These applications showcase how machine learning is transforming education by promoting personalized learning experiences, improving educational outcomes, and assisting educators in delivering high-quality instruction. As technology continues to advance, the role of machine learning in education is likely to expand, offering new possibilities for innovative teaching and learning approaches.

Challenges and Limitations

a. **Data Privacy and Security:** The handling of sensitive data poses challenges regarding privacy and security. This section discusses the ethical considerations and safeguards necessary for responsible machine learning.

b. **Interpretability:** The lack of interpretability in machine learning models hinders their widespread adoption. We explore the importance of model interpretability and avenues for improvement.

c. **Bias and Fairness:** Biased models can perpetuate discrimination. This section addresses the challenges of bias in machine learning and emphasizes the need for fairness in model development.

Conclusion

In conclusion, this research article provides a comprehensive overview of machine learning applications in the real world. By addressing current challenges and proposing research directions, we aim to contribute to the ongoing dialogue between academia and industry. The transformative power of machine learning can be harnessed more effectively by aligning research efforts with the evolving needs of real-world applications.

References

1. Ananiadou K, Claro M (2009). 21st century skills and competences for new millennium learners in oecd countries. Paris: OECD Education Working Papers.
2. Applied Educational Systems (2019). What are the 4C's of 21st century skills? Retrieved from https://www.aeseducation.com/careerreadiness/what-are-the-4-cs-of-21st-century-skills
3. Bulus M, Atan A, Sarıkaya HE (2017). Effective communication skills: A new conceptual framework and scale development study. International Online Journal of Educational Sciences 9(2):575-590.
4. Bartolomé, A., Castañeda, L., & Adell, J. (2018). Personalisation in educational technology: The absence of underlying pedagogies. International Journal of Educational Technology in Higher Education, 15(1), 1–17. https://doi.org/10.1186/s41239-018-0095-0
5. Babori, A. (2020). Trends in MOOCs Research: Analysis of Educational Technology Journals. International Journal of Emerging Technologies in Learning (iJET). 15. https://www.researchgate.net/publication/344856585_Trends_in_MOOCs_Research_Analysis_of_Educational_Technology_Journals/citation/download
6. Center for Curriculum Redesign. (2015). Skills for the 21st century: What should students learn? Retrieved from https://curriculumredesign.org/wp-content/uploads/CCRSkills_FINAL_June2015.pdf
7. Davila S (2016). 21st century skills and the English language classroom. Retrieved from https://www.english.com/blog/21stcentury-skills/
8. Doleck T, Bazelais P, Lemay DJ, Saxena A, Basnet RB (2017). Algorithmic thinking, cooperativity, creativity, critical thinking, and problem solving: Exploring the relationship between computational thinking skills and academic performance. Journal of Computers in Education 4(4):355-369.
9. Danilov, G. V., Shifrin, M. A., Kotik, K. V., Ishankulov, T. A., Orlov, Yu. N., Kulikov, A. S., & Potapov, A. A. (2020). Artificial intelligence in neurosurgery: a systematic review using topic modelling. Part I: major research areas. Sovremennye Tehnologii v Medicine, 12(5), 106. https://doi.org/10.17691/stm2020.12.5.12
10. Hew, K. F., & Cheung, W. S. (2014). Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges. Educational Research Review, 12, https://doi.org/10.1016/j.edurev.2014.05.001
11. Kimmons, R., & Rosenberg, J.M. (2022). Trends and Topics in Educational Technology, 2022 Edition. TechTrends 66, 134–140. https://doi.org/10.1007/s11528-022-00713-0
12. Sarker, I. H. (2021). Machine learning: Algorithms, real-world applications and research directions. SN Computer Science, 2, 160. https://doi.org/10.1007/s42979-021-00592-x
13. Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education—Where are the educators? International Journal of Educational Technology in Higher Education, 16(1), https://doi.org/10.1186/s41239-019-0171

Parichay Maharaja Surajmal Institute Journal of Applied Research

G-20 Collaboration Worked for Attainment of SDG

Dr. Bhoomika Saroha[1]

Abstract

In the bedrock of financial turbulence globally, the forum of G-20 emerged for international governance and cooperation. With the passage of time & increasing complexities of the world, G-20 has gone beyond the sphere of economic and financial crises and contributed a lot to the Sustainable Development Goals across the various dimensions may be economic, social or environmental etc. India's presidency of G-20 in 2023 needs a special mention as it played a vital role to carry forward its objectives.

Keywords: G-20, SDG- Sustainable Development Goals, Globally, Economic

Introduction

G-20 initially owes its origin to 1997-98 financial crisis of East & South East Asian countries. Because of Global financial crises in 2008 it was upgraded to the levels of head of government. And in 2008 it was declared as the main forum for "International. Economic Cooperation":

G-20 comprises 19 countries and the European Union accounting for 85% of the GDP, 75% of international trade and about 67% of the world population .G-20 has 2 parallel tracks

- Finance track -focuses on financial & economic issues
- Sherpa track- socio economic issues

Objective of the Role

Role played by G-20 in attainment of SDG and their progress

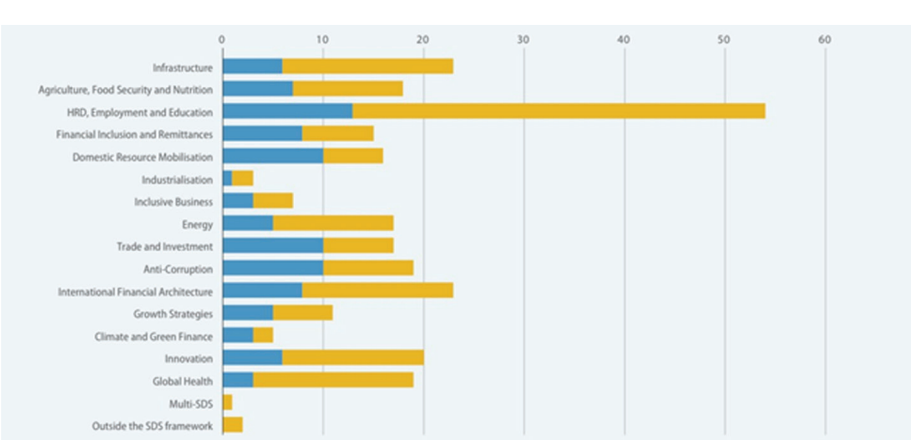
Literature Review

- Furman et al 1998, accoreded G-20 the statue of the main forum for resolving economic and financial crises
- Kirton. J. J. 2016, highlights the role of G-20 in managing & overseeing the global financial system to say a few- creation of financial stability Board etc.
- Renu Modi, 2021 highlighted the positive role played by G-20 in economic and social areas of global governance and development.
- Rajiv Kumal 2021 explored the Importance of G-20 as an economic and financial forum by focusing on past performers and also the issues like balancing priorities and managing diversity
- Sach et al, 2022 - G-20 focused on mitigating the pandemic situation, challenges in international trade created by COVID-19.

Research Methodology

Research is based on secondary data that is published in newspapers, journals and the websites of national & international organizations. The G-20 envisions the SDG 2030 document as a **"living document"**. Then the contribution by the G-20 to ward's the global efforts can be seen as under

[1] *Assistant Professor, Department of Business Administration, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*



Number of Recorded G20 in Sustainable Development Sectors (2010-2019) Source: OECD by UNDP2019

G-20 worked to ensure balanced, sustainable and inclusive growth. To achieve this they used monetary, fiscal as well as structural policy tools.Focused on the revival of International trade along with the integration of developing countries, thus contributing

SDG 8- economic growth

SDG 10- on inequalities

SDG 17-regarding global partnership

Further it ensured free flow of FDI globally. Therefore bringing infrastructure and global trade to the forefront in the international markets and fostering industrialization.

In terms of social dimensions G-20 focused on human resource development, employment generation and educating the citizens of different countries so as to have an able & skilled workforce. Thus focus on SDG relation to education, health, etc.

From the environmental perspective it laid emphasis on climate and green finance as only 19% of carbon emission by G-20 is equated with EUR 30 per tonne of CO2. Issues like Clean Energy, Gender equality, Innovation & Cooperation are also being addressed in detail.

Conclusion

It can be clearly seen that G-20 has contributed positively a lot towards the SDG attainment and here needs Special mention of India's 2023 Presidency of G-20 which focused on further accelerating the progress of SDG by emphasizing on LIFE (Green Development, climate finance and Life for Environment); Reforms of multilateral institutions, keeping pace with technology transfer and development of infrastructure. And also to promote socio- economic development along with inclusive growth & development by making it- women led development.

References

1. https://ignited.in/I/a/306943
2. https://amprep.com/-exam/g20-upsc#toc-9
3. https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1668.pdfdravi.com/quest--notes/g20/
4. https://www.researchgate.net/publication/372967447_A_STUDY_ON_PRESIDENCY_OF_THE_G20_IN_INDIA_SWOC_ANALYSIS/link
5. https://www.oecd.org/dev/OECD-UNDP-G20-SDG-
6. https://www.g20.org/content/dam/gtwenty/gtwenty_new/document/G20_Research_Ministerial_ODCS.pdf
7. nsightsonindia.com/international-relations/important-international-institutions-agencies-and-further-structure-mandat

Parichay Maharaja Surajmal Institute Journal of Applied Research

Ethical Business Practices - A Road Map for Integrated Sustainability

Dr. Dimpy Sachar[1], **Ms. Kanika Chaudhary**[2]

Abstract

The purpose of this research paper is to explore the concept of ethical business practices as a roadmap for integrated sustainability. The paper focuses on the importance of ethical business practices in ensuring the sustainability of organizations in the long run. The paper presents a conceptual framework that integrates ethical business practices and sustainability, and analyses the literature on the topic. As the world becomes increasingly aware of the need for sustainable development, businesses are starting to prioritize ethical practices to achieve integrated sustainability. This paper explores the importance of ethical business practices for sustainable development, the benefits of such practices, steps to achieving integrated sustainability through ethical practices, and best methods and ways for implementing ethical business practices for sustainable development. Additionally, the paper examines case studies of businesses that have successfully implemented ethical business practices for improving and developing sustainability and highlights the challenges in implementing such practices. The findings indicate that ethical business practices are critical for achieving sustainability, and these practices are basically a step that makes organization closer to achieving their targets in a better and environment friendly manner. The organizations that practice ethical business are likely to be more sustainable than those which are yet to follow this path. The paper concludes by providing recommendations for organizations to integrate ethical business practices into their sustainability strategies.

Keywords: Ethical Business practices, corporate social responsibility, environmental impact, ethical decision-making, sustainability integration

Introduction

The term "sustainability" has gained significant attention lately as organizations look to mitigate their effect on the environment while meeting their economic objectives. In recent times, ethical business practices have become progressively significant in the corporate dimension. Ethical business practices refer to a wide range of activities, including responsible sourcing, sustainable production of goods & services, and ethical marketing. Organizations are understanding the need and importance of conducting business in an ethical, mindful and responsible manner to guarantee long-term sustainability which is very essential for them and for the world as a whole. Ethical business practices ensure that the organizations conduct their tasks in a socially dependable way, limiting the adverse consequences on the climate, and promoting the well-being of its stakeholders and partners. The whole idea of integrated sustainability involves the combination of environmental, social, and economic considerations into an organization's process and tasks. This research paper studies the connection between ethical business practices and integrated sustainability and provides a roadmap for organizations and associations to accomplish sustainable developments and improvements following the core ethical business practices.

Review of Literature

As businesses become increasingly aware of their social and environmental impact, many are looking forward to integrating ethical and sustainable practices into their business tasks and operations. Several authors across the world explored the relationship between ethical business practices and sustainable business strategies, with many of them suggesting that these two concepts are closely interrelated.

Lee and Park (2013) found that ethical leadership positively influences sustainable performance. They argued that ethical leadership enhances employees' commitment to sustainability and fosters a culture of responsibility towards the environment and society.

Kraaijenbrink, J., Spender, J. C., & Groen, A. J. (2010) conducted a systematic review of the literature on the relationship between corporate social responsibility (CSR) and sustainable business practices. They found that CSR positively affects sustainable business practices, including

[1] *Assistant Professor, Department of Computer Applications, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

[2] *Assistant Professor, Department of Business Administration, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

eco-friendly production methods, sustainable supply chain management, and social sustainability. The authors emphasized the need for organizations to adopt a strategic approach to CSR and to integrate sustainability into their core business strategy.

Ferrel O.C. , Fraedrich John, Ferrel Linda (2021)- Ideally, the organizations are not only seen as mere profit making entities who have moral obligations and are also accountable for their conduct to various stakeholders like employees, customers, investors, suppliers and government. They emphasized on the fact that organizations must fulfil their ethical and legal obligations, failing which they can face severe consequences, including negative publicity. It was also found that culture that focuses on the importance of ethics and social responsibility can even mitigate or reduce misconducts that might possibly arise in the business.

Zhang and Morse (2019) conducted a study on the relationship between corporate social responsibility (CSR) and sustainable development in the Chinese context. They found that CSR positively influences sustainable development, including sustainable production methods, responsible supply chain management, and ethical marketing practices. The authors suggested that organizations should prioritize CSR and sustainable development to achieve long-term success and to contribute to the well-being of society and the environment.

Similarly, a study by Carroll (2017) suggests that ethical and sustainable business practices can create long-term value for companies, as well as for society as a whole. The author argues that by incorporating ethical and sustainable practices into their operations, companies can build strong relationships with customers, employees, and other stakeholders, which can in turn help drive long-term success.

Another study by Husted and Allen (2006) explored the relationship between corporate social responsibility (CSR) and sustainable business practices. The authors argue that CSR is an important component of sustainable business strategies, as it can help companies align their social and environmental goals with their core business objectives.

A study by Lozano R. (2017) explored the role of sustainability reporting in promoting ethical and sustainable business practices. The author argues that by publicly reporting on their sustainability performance, companies can create greater transparency and accountability, and demonstrate their commitment to ethical and sustainable practices.

Ashrafi, M., Adams, M., Walker, T. R., & Magnan, G. (2018) It is of fundamental significance that organizations incorporate sustainability strategies in their plans of action, from changes in their administration, in the short term connected with the economic and environmental perspectives and, in the long term related with the social presentation of the organization, having center around results that add to a continuous improvement

Ray & Chaudhuri (2018) It is feasible to make social worth by adding to the development and prosperity of society via conducting and supporting social drives and activities for poverty alleviation, human capital advancements, child development, equality, social and gender justice.

The research suggests that ethical and sustainable business practices are becoming more vital for companies that want to succeed in the long run and avoid risks associated with environmental and social impacts. The literature review has provided insights into the importance of integrating sustainability into all aspects of a company's decision-making processes, prioritizing stakeholder engagement, transparency, and responsible governance.

A study by Amoako G.K., Doe J.K. and Dzogbenuku R.K. (2021) examined the influence of perceived ethicality of a firm on customer loyalty, with a focus on the mediating role of corporate social responsibility (CSR) and perceived green marketing. The results showed that consumers' brand loyalty is favourably impacted when they believe a company to be highly ethical. The study also revealed that this relationship is mediated by customers' perceptions of the firm's CSR initiatives and its green marketing practices. Customers are more inclined to become loyal to a brand they perceive as socially responsible and environmentally conscious.

Methodology of the Study

The purpose of this research paper is to explore the role of ethical business practices in promoting sustainability. The presented study is descriptive in nature and in order to achieve this objective, a thorough literature review was also conducted to identify and analyse the existing research on ethical and sustainable business practices.

Objectives of the Study

- To study how ethical leadership influences sustainable business policies and the organization's overall sustainability performance.
- To analyse how corporate social responsibility (CSR) impacts sustainable business strategies and how to integrate social and environmental goals into the core of a company's aims.
- To evaluate the long-term value generated by the organizations that adopt and implement ethical business practices, both for the organization itself and for society as a whole.
- To discuss and analyse H&M's ethical business practices and their role in promoting sustainability, providing insights for organizations striving to integrate sustainability into their regular operations.

Source of Data: This study utilizes a secondary data analysis approach to review ethical business practices as a roadmap for integrated sustainability. The data has been sourced from a variety of research papers, articles, online journals, magazines etc.

Limitations of the Study: One limitation of this research paper is that it is entirely based on the existing literature, and therefore, it may not provide a thorough examination of ethical and sustainable business practices. Additionally, the research may be subject to publication bias, as studies

reporting positive results may be more likely to be published than those reporting negative results.

Conceptual Framework

The conceptual framework for this paper is in reference to the concept that ethical business practices are a major part or component of achieving integrated sustainability. This framework also studies the importance of ethical business practices for sustainable development, the benefits of such practices, steps to achieving integrated sustainability through these ethical methods, and best practices for implementing ethical business practices for sustainable development. Organizations have become more delicate to social issues and stakeholder concerns and are endeavouring to turn out to be better corporate residents. Whether the inspiration is a concern for society and the climate, unofficial law, stakeholder's pressures, or financial benefit, the outcome is that managers should make significant changes to more efficiently manage their social, economic, and environmental impacts. Epstein (2008) represents CS through nine rules that make corporate sustainability definition more exact, which can be evaluated and adapted, as well as incorporated into day to day operations, significant & ethical decision making.

Table 1 Nine principles for defining1 CS

CS Principle	Interpretation
Ethics	Monitoring ethical standards and practices through the whole organization
Governance	Managing the company's resources with a focus on interests of all the stakeholders from the boards
Transparency	Visibility and accessibility of information from the company's stakeholders
Business relationships	Engaging in fair-trading practices with the business partners, suppliers and customers
Financial return	Providing positive returns on investments
Community involvement	Taking into consideration the needs of the community in which the company operates
Value of products and services	Presenting high value products and services with respecting the needs and rights of the customers
Employment practices	Engaging into management practices that promote employee appraisal, commitment and development
Protection of the environment	Involving into environmental conservation and restorage through sustainable business practices and viable products and services. Minimizing natural resources utilization and reducing waste emission.

The importance of ethical business practices for sustainable development cannot be overstated. An organization must follow good business ethics and practices in order to avoid any legal and regulatory issues in future. It is also vital for the businesses to comply with ethics to build their reputation in the market, among their customers, investors and other stakeholders as well. When an organization follows ethical practices, it not only attracts customers but also retains them and builds a strong customer base which results in an increased revenue or even help in acquiring great market shares.

Public perception plays an important role here. It has been studied earlier that about half of the public pays at least some amount of attention to the corporate social behaviour of the organizations, and 20% will actively speak out against or refuse to be associated with companies they accept or notice are behaving unethically. The employees working in the organization are the quality building asset for that organization and should be given equal importance. Employees prefer working in an organization that derives them a positive and healthy working culture and an environment where they can advance and excel in their jobs based on their performance rather than favouritism or other means. When employees sense unfairness at the workplace, they are most likely to get demotivated and as a result, the organization suffers. For instance, pay increments and advancements ought to be given on the basis of performance rather than bias. Employees ought to be paid as guaranteed and on time. This forms trust among employees and the organization, which emphatically adds to the work environment and retains the hardworking employees in the company. And retaining the existing employees results in saving the cost incurred in recruiting new ones.

Organizations ought to likewise treat their clients, customers or partners reasonably. They should avoid overcharging for items or exaggerate the worth of what they offer. They should make every effort to keep the pricing, delivery, and service-level commitments of their goods & services to customers. Fulfilling all the promises made to the customers while marketing of products can add up to the reputation of the company and build trust among the customers. A strong company reputation attracts more suppliers, investors and partners because an organization that promotes ethics in their business operations also creates an investment-friendly space. Investors are motivated to invest their money where they are sure it is safe to.

Following ethical practices at organizations also increases productivity. People will work dedicatedly at their jobs if they believe that what they are doing is ethical and they may feel more motivated to work because they are certain that by doing so they are making the world a better place to live in. Ethics results in sustainable growth in sales. An increase in the customer base leads to an increase in demand for the company's deliverables. Therefore, more goods and services are sold. Businesses may view that a little selfishness might help their business to grow, however this is never the case. Following unethical actions may seem to give your business a temporary boost, but they will negatively affect the long-term goals. One of the key benefits of ethical business practices is improved environmental sustainability. For example, companies such as Tesla, Patagonia, and Unilever have implemented sustainable practices such as using renewable energy, reducing carbon emissions, and promoting sustainable products.

These practices have helped them achieve their environmental sustainability goals, reduce their impact on the environment, and promote sustainable development.

The Body Shop is a cosmetics and skincare company that has been a leader in ethical business practices and sustainability for over 40 years. The company's founder, Anita Roddick, was a vocal advocate for social and environmental issues and believed that businesses could make a positive impact on society. The Body Shop's ethical business practices are positioned on its commitment to natural ingredients, fair trade, and animal welfare. The company sources its ingredients from around the world, supporting marginalised and small-scale farmers and communities, and also ensuring that the sourcing process is sustainable and environment friendly. The company also has a strong commitment to animal welfare. They were the first major cosmetics company to ban animal testing in its products and have been an active advocate for ending animal testing in the cosmetics industry. The Body Shop also uses sustainable packaging and is committed to reducing its negative environmental impact. Body Shop following all these methods shows that ethical business practices can lead to improved sustainability, customer loyalty, and financial success. And for prioritizing the sustainability in business and valuing the social and environment issues, the company has been awarded many times by numerous organizations and publications.

Best practices for implementing ethical business practices for sustainable development also include implementing sustainable supply chain practices, promoting green marketing and environmentally friendly products and services, engaging in Corporate Social Responsibilities initiatives, and reducing the company's carbon footprint.

For example, H&M has implemented sustainable supply chain practices such as using organic cotton. H&M's collection has a separate "conscious collection" in which they have included the clothing made from organic cotton, recycled polyester and other sustainable materials. H&M believes that the only trend worth following is recycling and repairing and hence they also launched a scheme where people can drop off their pre-loved garments at the retail stores and can get coupons on their next purchase. It is also engaging in CSR initiatives such as supporting education programs in Bangladesh. These practices have helped H&M achieve integrated sustainability and side by side developing a better reputation in the market and increased profitability. Hence, Ethical action is the key to sustainability and success in business. By implementing these best practices adopted by the industry leaders and studied by various researchers, businesses can achieve integrated sustainability and reap the benefits of improved environmental and social sustainability, as well as increased profitability and stakeholder engagement.

A Case Discussion of H&M

H&M, a Swedish retailer, is among the most renowned fast fashion labels in the world. It operates in 74 nations worldwide. H&M desires to be a fair and equal company while guiding its move to a circular fashion industry with net-zero climate impact. Although it claims that it is pursuing more environmentally friendly procedures, we need to confirm this by finding out just how ethical and environmentally friendly H&M is.

Code of Ethics: The Code of Ethics of H&M establishes a zero tolerance policy for corruption and mandates adherence to all applicable laws as well as a set of corporate values. Among other things, it specifies there shouldn't be any exchange of gifts or favours of any type between the business partners H&M Group workers worldwide, it includes various other code of ethics and norms. **Transparency:** H&M says that their focus remains on these two key fundamental goals which are-

- Giving clients knowledge they require about the company and the products will enable them to make informed decisions.
- Promoting sustainable change more rapidly: By improving transparency and traceability throughout the value chain, to be able to better manage the effects and establish industry benchmarks.
- To enable more transparency, traceability is essential. It's crucial to have accurate data on products and raw resources. Together with its partners and all relevant stakeholders, H&M is dedicated to enhancing the comparability and quality of the data, systems, and calculations they utilise.

Recognition for transparency: With a score of 66% (68% in 2021) H&M was ranked fourth in the Fashion Revolution's 2022 Transparency Index. According to the data they provide about their social and environmental policies, practices, and impacts on their operations and supply chain, the index rates 250 of the largest fashion brands in the world. Compared to 71% last year, 50% of stakeholders assess H&M Group's transparency as good or very good, indicating that more has to be done to regain stakeholder confidence in its goals and actions.

Climate Strategy and Environmental Impact: H&M's long-term goal is to achieve net-zero according to the net-zero benchmark set out by the Science Based Targets initiative (SBTi). Before balancing out any minor residual emissions that cannot be avoided, this standard focuses on lowering GHG emissions utilizing permanent carbon dioxide removals. It also has few targets set keeping in mind different aspects of the value chain.

Table 2 Targets to be achieved by 2030

Year	Target to be achieved
By 2030	Reduce the amount of electricity used in its stores by 25% compared to the baseline year of 2016.
By 2030	source 100% renewable electricity in their own business operations
By 2025	30% of resources should be recycled

Figure 1 Source: HM Group Sustainability Disclosure 2022

Circularity, Climate & Nature KPIs

Details of specific goals and additional data, including the reasons for changes in performance this year, are included within relevant sections of the Circularity, Climate & Nature chapter.

Circularity, Climate & Nature KPIs[1]	2019	2020	2021	2022	GOAL
Climate: % absolute reduction (scope 1 and 2) in GHG emissions compared with 2019 baseline[2,3]	-	+15%	-22%	-8%	-56% by 2030
Climate: % absolute reduction (scope 3, excluding use phase) in GHG emissions compared with 2019 baseline[3]	-	-8%	-3%	-7%	-56% by 2030
Climate: % change in GHG emissions from own operations (scope 1 and 2) compared with previous year[3,4]	+8%	+15%	-32%	+18%	Monitor
Climate: % change in scope 3 GHG emissions compared with previous year[3]	-3%	-8%	+5%	-4%	Monitor
Climate: % change in electricity intensity in our stores (kwh/m2 per opening hour) compared with 2016 baseline[3,5]	-10%	-17%	-17%	-23%	-25% by 2030
Climate: % renewable electricity in own operations[3]	96%	90%	95%	92%	100% by 2030
Water: % reduction in production water use (water intensive tier 1 and 2 suppliers) from 2017 baseline[6,7]	-6%	-4%	-14%	-21%	-25% by 2022
Water: % of water recycled out of total production water consumption	13%	18%	21%	21%	15% by 2022
Water: % change in absolute total freshwater use (2022 baseline)[8]	See footnote 8	See footnote 8	See footnote 8	See footnote 8	-30% by 2030
Commercial goods: % of recycled or other more sustainably sourced materials total[9]	57%	65%	80%	84%	100% by 2030
Commercial goods: % of other more sustainably sourced materials[9]	55%	59%	62%	61%	Monitor
Commercial goods: % of recycled materials[9]	2%	6%	18%	23%	30% by 2025
Packaging: % of recycled or other more sustainably sourced materials[9]	-	-	68%	85%	100% by 2030
Packaging: % reduction in plastic packaging from 2018 baseline	-	-24%	-28%	-44%	25% by 2025
Chemicals: % of supplier factories compliant with ZDHC Manufacturing Restricted Substances List	80%	88%	95%	97%	100%
Garment collecting initiative: Tonnes of garments collected through garment collecting initiative[10]	29005	18,800	15,944	14,768	Annual increase

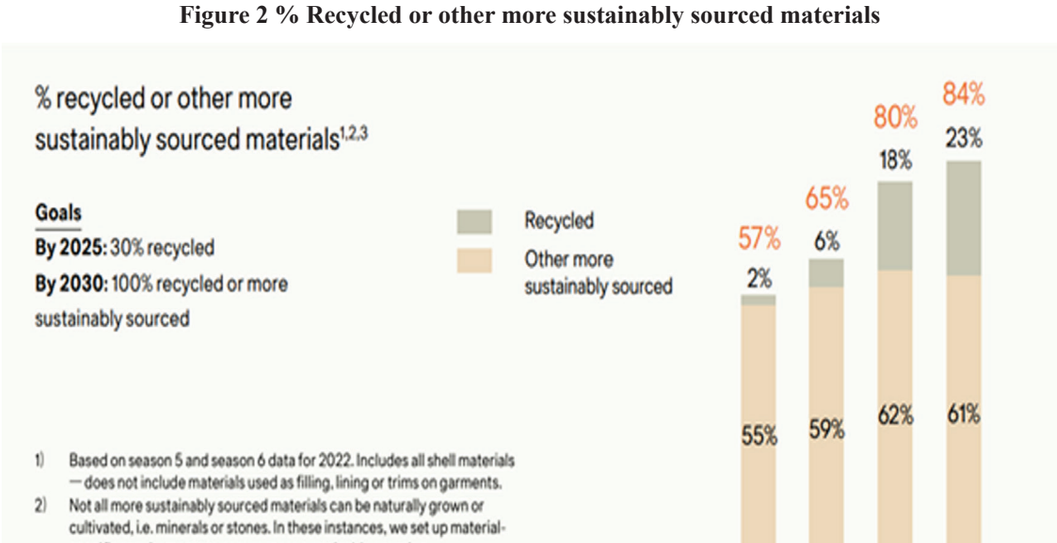
1) We are not reporting against our % change in packaging this year, since we are in the process of revising the goal and our circular packaging strategy, including a new baseline figure.
2) Scope 1 and 2 are direct and indirect emissions of greenhouse gases from H&M Group's own operations, e.g. stores, distribution centres and offices.
3) See page 88 for an assurance statement relating to these data points. The limited assurance process included energy use, energy efficiency in stores, emissions from our own operations (scope 1 and 2), emissions from transportation, raw materials, garment manufacturing and fabric production (scope 3), and all cotton and synthetics data, including our top three recycled materials (cotton, polyester, polyamide).
4) During 2022 we have identified that the conversion factor in our system for natural gas reported in therms was incorrect. Therefore we have underreported scope 1 emissions with 2072 tCO2e 2019, 1549 tCO2e 2020, and 3408 tCO2e 2021.
5) In 2021 we upgraded our system for registering store opening hours precisely during the period when many stores' opening hours were impacted by Covid-19 related lockdowns. For this reason, and with staff safety as our top priority, some of the irregularities in 2021 store opening hours were not recorded, which in turn decreased the 2021 energy efficiency KPI for those stores.
6) 2022 data based on Q1 to Q3. 2021 data restated as -14% for the full year - in last year's report we stated -10.3% based on Q1 to Q3 2021. From next year, we will move to reporting against our new Water Strategy 2030 goals, based on 2022 baseline data.
7) Includes a total of 440 manufacturing, fabric dyeing and printing suppliers in both tier 1 and tier 2 with water-intensive wet production, based on Q1-Q3 2022 performance data, reported by factory and calculated using weighted averages for litre per kg of dyed knitted fabric, litre per metre of woven denim fabric, and litre per unit of product washed.
8) New KPI added in 2022, in preparation for reporting from 2023 onwards.
9) In 2022 we continued to improve data management systems and the traceability process to secure certified packaging. To align with the 2021 improved methodology to capture FSC certifications, data for 2020 is removed.
10) Our garment collecting initiative was disrupted by the Covid-19 pandemic for part of the year in 2020 and for the full year in 2021. Since March 2022 our garment collecting has been paused in Ukraine, Russia and Belarus.

P.20 LEADING SUSTAINABILITY REPORTING SINCE 2002

Biodiversity Impact

- To lessen the impact on biodiversity caused by acquiring virgin materials and to use less land, H&M is trying to increase the recycled content of our products. By 2025, they hope to source 30% of all materials and 100% of polyester from recycled sources, which means they are making progress in their goals.
- As of 2022, 87% of the paper and cardboard used in H&M's packaging came from recycled or other sustainably obtained materials. By 2025, they intend to use only materials from these sources.
- In comparison to a baseline set in 2017, H&M has increased water efficiency in its supply chain by 21% and achieved a 21% water recycling rate. Additionally, 49% of its facilities currently harvest rainwater, against the target of 50%.
- A new Water Strategy 2030 was introduced, and relative usage of water per product was lowered by 38% compared to a baseline in 2017. **Material Choice:** By 2030, H&M intends to have 100% of its resources recycled or obtained from more environmentally friendly sources, with 30% of those materials coming from recycled sources.

Figure 2 % Recycled or other more sustainably sourced materials



Approach to be Fair & Equal

H&M believes that its business impacts the whole wide world, and the impact it makes should be positive. H&M is committed to providing fair wages and working conditions throughout its supply chain. In 2020, H&M trained more than 2.3 million workers on their rights, up from 1.7 million in 2018.

It has set targets to increase the representation of underrepresented groups, such as women and people of colour, in management positions. H&M also has a zero tolerance policy towards discrimination and harassment in the workplace.

Overall, H&M strives to promote social and environmental responsibility throughout its operations and supply chain with its holistic approach to being ethical and sustainable.

Findings and Conclusion

Ethical business practices are significant for achieving integrated sustainability. Organizations that integrate ethical business practices into their sustainability techniques are more likely to be successful in the long run. Based on the literature review and research conducted on the subject of ethical and sustainable practices, the below stated findings can be determined.

Ethical leadership plays a pivotal role in driving sustainable business policies, positively affecting an organization's sustainability performance. The integration of ethical and sustainable practices into business operations can create long-term value for companies and society as a whole, mitigating or reducing the risks associated with the environment and society. Additionally, corporate social responsibility/obligation is a crucial part of sustainable business strategies, as it helps companies align their social and environmental objectives with their very core business goals, and prioritize sustainability to maintain healthy supply chain relationships. This approach has been proven to yield strong financial performance and a positive reputation among partners and stakeholders.

Moreover, companies that adopt and implement ethical practices build brand reputation in the market and gain the trust of their customers and investors. This results in increased loyalty and customer retention, which can reduce costs such as waste, energy consumption, and resource usage. Furthermore, companies that give importance to business ethics have higher employee commitment and increased productivity, leading to improved business performance and successful accomplishment of organizational goals. By adopting sustainable business strategies, organizations can stay ahead of regulatory requirements and predict future changes in environmental and social governance.

In conclusion, this research paper has explored the importance of ethical and sustainable business practices as a roadmap for integrated sustainability. The literature review has highlighted the growing awareness and significance of moral and sustainable practices, supported by findings from various studies. Ethical leadership, corporate social responsibility, stakeholder engagement, and transparency have emerged as critical factors in driving sustainable business strategies. Companies that prioritize sustainability and integrate ethical practices into their decision-making processes stand to gain long-term success, reputation, and stakeholder trust.

Based on the findings and literature review, several recommendations can be made to guide organizations in adopting ethical and sustainable practices. Firstly, companies should emphasize the integration of sustainable business strategies across all stages of their decision-making process, including product planning, supply chain management, and product launch. Clear targets and objectives for sustainability should be established, with regular tracking and reporting of progress towards meeting these goals.

Furthermore, engagement with stakeholders, including investors, customers, and suppliers, should be a regular practice to understand their expectations and concerns related to sustainability. This will enable organizations to align their practices with stakeholder needs and enhance stakeholder trust and satisfaction. Additionally, companies should invest in sustainable research and development, fostering innovation and the creation of environmentally friendly products and services.

Collaboration with suppliers and vendors is crucial to promoting ethical and sustainable practices throughout the supply chain. This includes responsible sourcing, waste minimization, and fair labour practices. Prioritizing diversity and inclusion within the organization can help businesses avoid perpetuating societal injustices and inequalities through their operations.

Moreover, adopting ethical marketing practices is essential, ensuring transparency in product promotion and minimizing negative impacts on society and the environment. By communicating honestly and ethically with customers, organizations can build trust and strengthen their reputation.

By following these recommendations, businesses can enhance their competitive advantage, build trust and credibility with stakeholders, and contribute to a more sustainable and responsible business landscape. This research paper serves as a valuable resource and roadmap for organizations seeking to integrate ethical and sustainable practices into their business operations. As the world faces increasing environmental and social challenges, it is essential for businesses to take proactive steps in promoting ethical and sustainable practices. By doing so, they can not only achieve long-term success but also make a positive impact on society and the environment.

Future Implications of the Study

Enable future researchers to monitor the long-term implications and impact of moral corporate conduct on sustainability performance.

Future research can deeply understand the perspectives and expectations of different stakeholders, including employees, customers, investors, and local communities, regarding ethical business practices and their role in integrated sustainability. This would provide a thorough understanding of stakeholder engagement and its impact on organization's success.

Investigating consumer behaviour and perceptions of ethical business practices and sustainability would be beneficial. Future research could examine how consumer preferences, purchasing decisions, and brand loyalty are affected by a company's ethical and sustainable practices.

Future studies could focus on creating curriculum, training programmes, and capacity-building exercises to give current and future business leaders the information and abilities they need to incorporate sustainability into their decision-making processes.

Future studies could explore the role of government regulations, incentives, and frameworks in promoting and supporting sustainable practices, as well as the impact of global agreements and standards on organizational behaviour.

References

1. Amoako G.K., Doe J.K. and Dzogbenuku R.K. (2021), "Perceived firm ethicality and brand loyalty: the mediating role of corporate social responsibility and perceived green marketing", Society and Business Review, Vol. 16 No. 3, pp. 398-419
2. Ashrafi, M., Adams, M., Walker, T. R., & Magnan, G. (2018). How corporate social responsibility can be integrated into corporate sustainability: a theoretical review of their relationships. International Journey of Sustainable Development and World Ecology, 25(8), 672–682.
3. Carroll, A. B. (2017). Corporate social responsibility: A review of current concepts, research, and issues. In The Oxford Handbook of Corporate Social Responsibility (pp. 1-20). Oxford University Press.
4. Choi, B.B.; Lee, D.; Park, Y. (2013) Corporate social responsibility, corporate governance and earnings quality
5. Crane, A., Matten, D., & Spence, L. (2019). Corporate Social Responsibility: Readings and Cases in a Global Context. Routledge.
6. Epstein, M. J., & Buhovac, A. R. (2014). Making Sustainability Work: Best Practices in Managing and Measuring Corporate Social, Environmental, and Economic Impacts. Berrett-Koehler Publishers.
7. Husted, B. W., & Allen, D. B. (2018). Corporate social responsibility in the multinational enterprise: Strategic and institutional approaches. Journal of International Business Studies, 49(6), 678-705
8. Kraaijenbrink, J., Spender, J. C., & Groen, A. J. (2020). The relationship between corporate social responsibility and sustainable business practices: A systematic literature review and future research agenda. Journal of Cleaner Production
9. Ray, S., & Chaudhuri, B. R. (2018). Business group affiliation and Corporate Sustainability strategies of firms: An investigation of firms in India. Journal of Business Ethics, 153(4), 955–976.
10. Schaltegger, S., & Wagner, M. (2011). Sustainable entrepreneurship and sustainability innovation: categories and interactions. Business Strategy and the Environment, 20(4), 222-237.
11. Zhang Dongyong, Morse Stephen (2019)- Corporate Social Responsibility and Sustainable Development in China: Current Status and Future Perspectives

Parichay Maharaja Surajmal Institute Journal of Applied Research

Persistent Technologies Like Modified E-Learning and MOOC Recommender System in IoT-Enabled Smart Education

Hemendra Kumar[1], Sundeep Kumar[2]

Abstract

In the era of digital transformation, IoT-enabled smart education has emerged as a promising avenue for enhancing learning environments. This paper explores the role of personalized e-learning and Massive Open Online Courses (MOOCs) in modern education, emphasizing the need for an efficient recommender system to optimize learning experiences.

The study also explores the implementation, benefits, and effectiveness of these technologies, aiming to enhance the overall learning experiences of students, provides an overview of personalized e-learning and MOOCs, examining their impact on education. Previous studies on recommender systems in education are reviewed, highlighting their significance. Additionally, the integration of IoT in education is explored, emphasizing its potential to transform learning environments.

Key words: IoT ,MOOC's, e-learning, recommender system, digital transformation

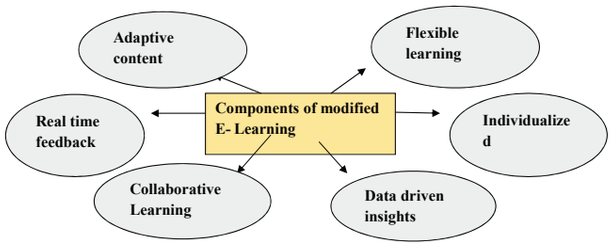
Introduction

In the rapidly evolving landscape of education, persistent technologies play a pivotal role in shaping the future of learning. This article delves into the realms of modified E-Learning and Massive Open Online Course (MOOC) Recommender Systems, highlighting their integration in Internet of Things (IoT)-enabled smart education environments. Traditional E-Learning has witnessed a transformative shift with the advent of IoT. Modified E-Learning leverages the power of interconnected devices to offer personalized and adaptive learning experiences. In an IoT-enabled smart education system, students can seamlessly access educational content tailored to their learning styles, preferences, and progress. The integration of sensors, wearable devices, and smart learning platforms ensures a dynamic and engaging educational journey. Among the key drivers are Personalized E-Learning and Massive Open Online Courses (MOOCs), which have redefined the educational landscape by offering flexible, accessible, and tailored learning experiences.

Personalised E-learning meaning and components

Personalized e-learning is a transformative approach to education that tailors learning experiences to the unique characteristics of each learner. refers to the use of technology to tailor educational experiences to the unique needs, preferences, and progress of individual learners. It involves the customization of learning content, pace, and assessment methods to create a more personalized and adaptive educational environment. This approach leverages technology, data analytics, and artificial intelligence to provide learners with a tailored learning journey that accommodates their learning styles, interests, and skill levels. This may include real-time data analytics, adaptive content delivery, and interactive features that leverage IoT sensors and devices.

Fig 1: Components of modified E-learning



a. **Adaptive Content:** Personalized E-Learning systems analyze learners' interactions with content and adjust the difficulty, format, and delivery of material to match their individual needs.

[1,2] *Assistant Professor, Department of Computer Applications, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

b. **Flexible Learning Paths:** Learners have the flexibility to choose their learning trajectories based on their understanding of the material. This allows them to skip over concepts they already know well and focus more on areas where they need improvement.

c. **Individualized Assessments:** Assessment methods are customized to each learner, ensuring that evaluations align with their unique learning journeys. This may include adaptive quizzes, real-time feedback, and personalized assessments.

d. **Data-Driven Insights:** The collection and analysis of data on learners' progress enable educators to gain insights into individual strengths and weaknesses. This data-driven approach facilitates timely interventions and targeted support.

e. **Personalized Content Delivery:** Modified E-Learning employs data analytics and machine learning algorithms to analyze students' learning patterns. This data is then utilized to customize content delivery, ensuring that each student receives relevant and targeted educational materials.

f. **Real-time Feedback and Assessment:** IoT devices facilitate real-time monitoring of students' progress. Teachers can provide instant feedback, enabling timely intervention and support. This approach fosters a continuous feedback loop, enhancing the learning process.

g. **Collaborative Learning Environments**: The interconnected nature of IoT devices encourages collaborative learning. Students can engage in group projects, discussions, and interactive activities, irrespective of physical locations. This collaborative aspect mirrors the teamwork and communication skills essential in the modern workforce.

h. **MOOC Recommender Systems:** Navigating the Sea of Educational Content: MOOCs have emerged as a valuable resource in the digital education landscape, offering a vast array of courses from renowned institutions. However, the sheer volume of available content can be overwhelming. MOOC Recommender Systems leverage machine learning algorithms to guide learners through this sea of educational resources, ensuring a tailored and efficient learning journey.

Features of MOOC Recommender Systems in IoT-Enabled Smart Education

Recommender systems play a crucial role in enhancing the learning experience by suggesting relevant Massive Open Online Courses (MOOCs) based on learners' profiles, preferences, and performance metrics. Here's an in-depth look at their role in this context:

Table 1: Features of recommender system

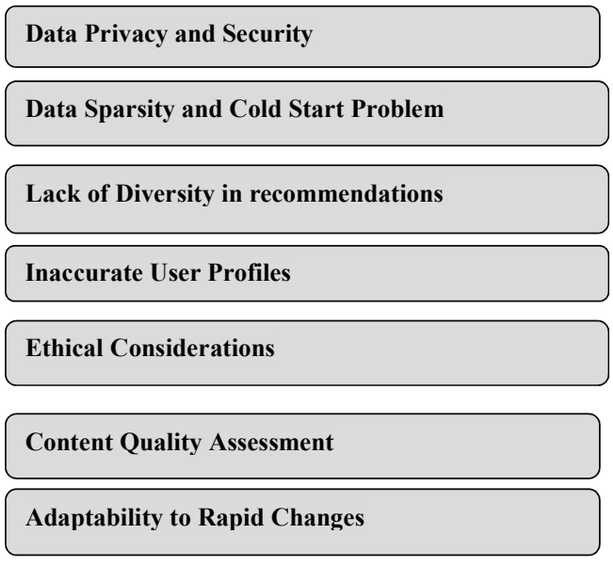
Features	Role of the recommender system
Personalization	Personalized recommendations ensure that learners receive content that aligns with their specific needs and goals, making the learning experience more engaging and relevant.
Content Discovery	Recommender systems help learners discover a diverse range of courses beyond their immediate preferences, fostering a broader and more well-rounded education.
Adaptive Learning Paths	By monitoring learners' performance metrics, recommender systems can dynamically adjust the difficulty level of recommended courses or suggest additional resources to support individual learning journeys.
Learning Analytics	Recommender systems leverage learning analytics, including data on completion rates, quiz scores, and interaction patterns, to refine recommendations. Continuous analysis of performance metrics allows the system to adapt and provide more accurate suggestions over time, enhancing the overall learning experience.
Retention and Engagement	Recommender systems contribute to higher retention rates by offering content that aligns with learners' interests and preferences. Engaging learners with content they find interesting and challenging helps maintain their motivation and commitment to the learning process.
Feedback Mechanism	Incorporating user feedback into the recommender system allows for constant improvement. Learners can provide ratings and reviews, helping the system understand the effectiveness of its recommendations. This feedback loop contributes to a more responsive and user-centric recommendation engine.
Resource Optimization	Recommender systems optimize the allocation of educational resources by directing learners to courses that are most likely to align with their goals.
Scalability	In the context of MOOCs, where a vast amount of educational content is available, recommender systems scale efficiently to handle the complexity of recommending courses to a large and diverse user base.

Challenges and Opportunities

Balancing the opportunities and addressing the challenges requires careful consideration of ethical, technical, and user-related factors. Developing transparent, fair, and user-friendly recommender systems is essential to harness their full potential in the educational domain.While persistent technologies bring immene promise to education,challenges like data privacy,cyber security,digital divide needs to be addressed .Continous research and development are also essential to refine and enhance these technologies,ensuring that they remain effective to refTop of Form

Furthermore, continuous research and development are essential to refine and enhance these technologies, ensuring that they remain effective and accessible to diverse learner populations.

Fig 2: Some of the challenges of recommender system in education



Future Directions

a. Integration of Emerging Technologies:

As emerging technologies continue to evolve, future research should explore the integration of augmented reality (AR), virtual reality (VR), and artificial intelligence (AI) to further enhance the immersive and interactive aspects of IoT-Enabled Smart Education.

b. Enhanced User Engagement:

Future developments should focus on strategies to enhance user engagement. Gamification, social learning features, and interactive simulations could be integrated to create a more engaging and collaborative learning environment.

c. Global Collaboration:

Collaborative efforts on a global scale can facilitate the sharing of best practices and the development of standardized protocols for IoT-Enabled Smart Education. This can foster a more inclusive and interconnected educational landscape.

Conclusion

In the ever-evolving landscape of education, persistent technologies, particularly modified E-Learning and MOOC Recommender Systems in IoT-enabled smart education, are catalyzing a paradigm shift. These technologies not only empower learners with personalized and adaptive educational experiences but also present educators with tools to enhance teaching methodologies. As we navigate this transformative journey, it is crucial to embrace innovation responsibly, harnessing the full potential of persistent technologies for the betterment of global education. The integration of modified E-Learning platforms and MOOC Recommender Systems within an IoT-Enabled Smart Education framework presents a transformative approach to learning. By leveraging the capabilities of IoT, educational experiences can be personalized, adaptive, and globally accessible, laying the foundation for a future where technology enhances the pursuit of knowledge and skills for learners around the world.

References

1. Ashton, K. (2009). That ‘internet of things’ thing. *RFID Journal, 22*(7), 97–114.
2. Ahmed, W., Hizam, S. M., Sentosa, I., Akter, H., Yafi, E., & Ali, J. (2020). Predicting IoT service adoption towards smart mobility in Malaysia: SEM-neural hybrid pilot study. *arXiv preprint* arXiv:2002.00152, 11(1), https://doi.org/10.48550/arXiv.2002.00152
3. Al Kurdi, B., Alshurideh, M., & Salloum, S. A. (2020). Investigating a theoretical framework for e-learning technology acceptance. *International Journal of Electrical and Computer Engineering (IJECE)*, *10*(6), 6484–6496. https://doi.org/10.11591/ijece.v10i6.pp6484-6496
4. Al-Musawi, A.S., Alghatrifi, I. (2021). Examining the Factors Affecting the Adoption of IoT Platform Services Based on Flipped Learning Model in Higher Education. In: Al-Emran, M., Shaalan, K. (eds), *Recent Advances in Technology Acceptance Models and Theories*. Studies in Systems, Decision and Control (vol 335). Springer. https://doi.org/10.1007/978-3-030-64987-6_9
5. Cheng, Y. M. (2011). Antecedents and consequences of e-learning acceptance. *Information Systems Journal, 21*(3), 269–299. https://doi.org/10.1111/j.1365-2575.2010.00356.x
6. El Alfy, S., Gómez, J. M., & Ivanov, D. (2017). Exploring instructors’ technology readiness, attitudes and behavioral intentions towards e-learning technologies in Egypt and United Arab Emirates. *Education and Information Technologies, 22*(5), 2605–2627. https://doi.org/10.1007/s10639-016-9562-1
7. Godoe, P., & Johansen, T. (2012). Understanding adoption of new technologies: Technology readiness and technology acceptance as an integrated concept.

Journal of European psychology students, *3*(1), 38–53. https://doi.org/10.5334/jeps.aq

8. Gómez, J., Huete, J. F., Hoyos, O., Perez, L., & Grigori, D. (2013). Interaction system based on Internet of things as support for education. *Procedia Computer Science, 21*, 132–139. https://doi.org/10.1016/j.procs.2013.09.019

9. Fayyaz, Z., Ebrahimian, M., Nawara, D., Ibrahim, A., & Kashef, R. (2020). Recommendation systems: Algorithms, challenges, metrics, and business opportunities. *Applied Science, 10*(21), 7748.

10. Patel, P., Ali, M. I., & Sheth, A. (2017). On using the intelligent edge for iot analytics. *IEEE Intelligent Systems , 32*(5).

11. Robinson, C., Yeomans, M., Reich, J., Hulleman, C., & Gehlbach, H. (2016). forecasting student achievement in MOOCs with natural language processing. *ICPS Proceedings.*

12. Villegas-Ch, W., Román-Cañizares, M., & Palacios-Pacheco, X. (2020). Improvement of an online education model with the integration of machine learning and data analysis in an LMS. *Applied Sciences, 10*(15).

13. Wang, X., Yang, D., Wen, M., Koedinger, K., & Rosé, C. P. (2015). Investigating how student's cognitive behavior in MOOC discussion forums affect learning gains. *Conference on Educational Data Mining (EDM).*

14. Wang, X., Yang, D., Wen, M., Koedinger, K., & Rosé, C. P. (2015). Investigating how student's cognitive behaviour in MOOC discussion forums affect learning gains. *Conference on Educational Data Mining (EDM).*

Parichay Maharaja Surajmal Institute Journal of Applied Research

Cyber Security and Responsible Online Behavior

Tarunim Sharma[1], **Kanika**[2], **Himanshu**[3]

Abstract

In today's digital era, understanding the intricacies of Cybersecurity and fostering responsible online behavior are paramount for a secure and resilient digital future. This research paper explores the dynamic landscape of cyber threats, including data breaches and malicious actions that pose significant risks to digital integrity. Additionally, it sheds light on the ethical considerations and social responsibilities tied to digital interactions, emphasizing the importance of cultivating a culture of responsible online conduct. The study seeks to underscore the interdependence of robust Cybersecurity measures and individual accountability, integrating theoretical frameworks, real-world case studies, and behavioral assessments. The paper advocates for building cyber resilience through collective commitment to ethical technology use, placing a strong emphasis on educational activities and awareness campaigns.

Keywords: Cyber Security, Cyber Threat, Privacy, Data Protection

Introduction

In today's digitally interconnected world, understanding the intricacies of cybersecurity and ethical online behavior is more critical than ever. The digital environment is constantly under siege from a myriad of cyber threats, ranging from data breaches to malicious actions that pose serious risks to the integrity of our globalized society. Simultaneously, the ethical dimensions inherent in online activities demand a shared commitment to cultivating a culture of accountability in our digital interactions.

This research seeks to conduct a comprehensive investigation into the intertwined realms of Cybersecurity and ethical online behavior. Recognizing the interdependence between robust Cybersecurity measures and individual accountability becomes increasingly crucial as we navigate the complex terrain of cyber threats. The study aims to elucidate the moral considerations and social responsibilities associated with our online presence, advocating for awareness-raising and educational initiatives that promote cyber resilience and responsible digital behavior.

Cyber Threats: A Comprehensive Overview

Understanding and managing diverse cyber risks is essential to protect individuals and organizations. This section provides a comprehensive overview of four significant cyber threats: Malware and Ransomware, Phishing Attacks, Identity Theft, and Social Engineering. It delves into the nature of each threat, their implications, and the importance of vigilance, education, and technological protections in countering them.

1. Malware and Ransomware:

The term "malware" and "ransomware" are used interchangeably. Malware is a collection of malicious software designed to cause harm or gain access to systems. It can be a virus, worm, Trojan horse, spyware, or other type of malicious software. Once it's in place, it can compromise data, interfere with operations, or act as a springboard for more attacks. Ransomware, on the other hand, is a type of malicious software that encrypts your files and asks you to pay (usually in crypto) for them to be released. This malicious software can cause financial losses as well as serious operational problems for businesses and people.

2. Phishing Attacks:

Phishing attacks involve the deception of sensitive information collection by appearing as trustworthy institutions. Phishing techniques, which are typically distributed via emails, texts, or bogus websites, deceive users into disclosing personal information such as login credentials or financial information. Vigilance and education are critical deterrents to falling prey to these deceptive methods.

3. Identity Theft:

Identity theft occurs when an attacker obtains unauthorized access to an individual's personal information, such as social security numbers or financial information, in order to commit fraudulent acts. Cyber criminals may use a variety of vectors, such as data breaches or phishing attempts, stressing the importance of strong identity protection and constant monitoring.

[1] *Assistant Professor, Department of Computer Applications, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

[2-3] *Student Department of Computer Application, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

4. Social Engineering:

Social engineering is the skill of persuading others to reveal sensitive information or perform acts that may jeopardize security. Pretexting, baiting, and quid pro quo scenarios are all examples of tactics. Social engineering takes use of trust and human error, emphasizing the significance of Cyber security knowledge and training.

As the digital realm evolves, so do the complexities of cyber threats. Combating these threats necessitates a diverse approach that includes technology protections, user education, and strong Cyber security policies. Individuals and organizations can dramatically improve their resistance to these pervasive cyber dangers by remaining educated and taking proactive measures.

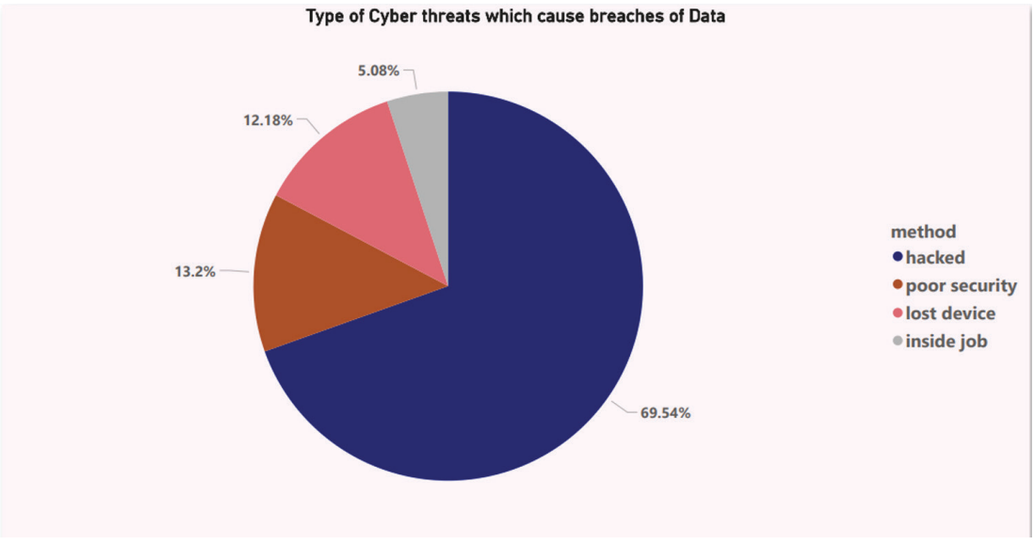
Data Breaches: A Comprehensive Overview from Kaggle Dataset

To enhance the empirical foundation of our research, we leveraged a comprehensive dataset obtained from Kaggle, specifically focusing on data breaches. The dataset provides valuable insights into the nature of data breaches, including various attributes such as breach methods, impact, severity level and affected industries, etc.

Types of Cyber Threat

We conducted a meticulous analysis, with a particular emphasis on the "method" which delineates the diverse approaches employed by cyber adversaries to perpetrate data breaches. Our goal is to offer a nuanced understanding of the prevalent methods, thereby contributing to a more informed discussion on effective cybersecurity strategies.

Fig -1 : Pie Chart representing reasons of Data Breaches



To visually represent the distribution of data breach methods, we utilized the "method" column to construct a pie chart. This graphical representation provides a clear and concise overview of the proportionate contribution of each method to the overall data breaches observed in the dataset.

Findings: The pie chart constructed from the "method" column of the Kaggle dataset unveils a comprehensive breakdown of data breach methods. The analysis indicates a diverse array of tactics employed by malicious actors, with distinct percentages associated with each method. The key findings are summarized as follows:

Hacking: 69.54%

- Hacking emerges as the predominant method, constituting a substantial 69.54% of the observed data breaches. This category encompasses various techniques employed by cyber adversaries to exploit vulnerabilities, infiltrate systems, and gain unauthorized access.

Inside Job: 5.08%

- Data breaches attributable to insider threats, classified as "Inside Job," account for 5.08% of the dataset. These incidents involve individuals within an organization intentionally or unintentionally compromising sensitive information.

Lost Device: 12.18%

- Approximately 12.18% of data breaches are attributed to the loss of devices containing sensitive information. This method underscores the importance of securing

devices to prevent unauthorized access to data in case of physical loss.

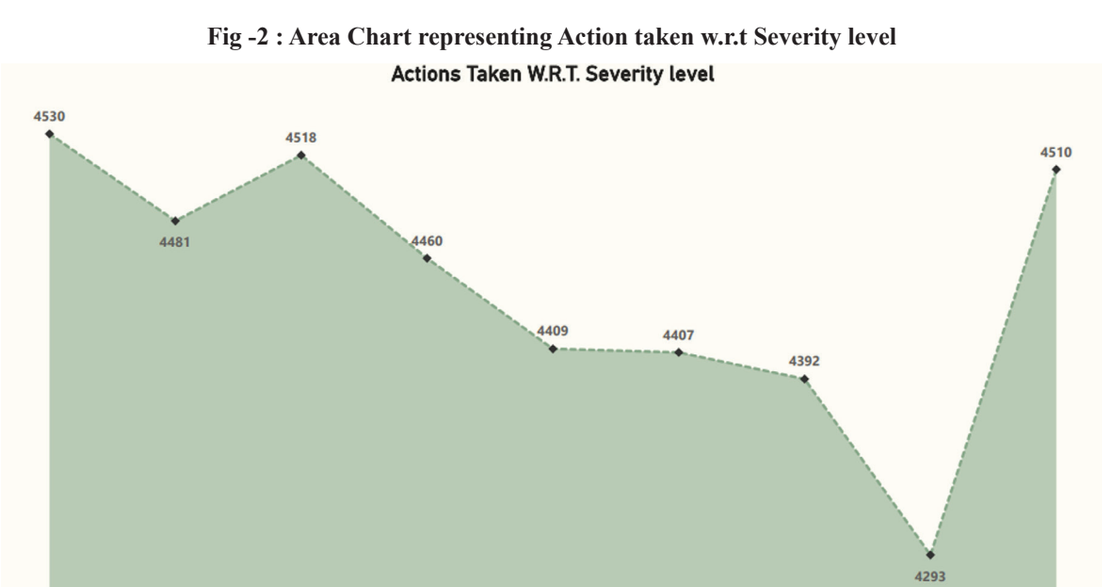
Poor Security: 13.2%

- Data breaches resulting from poor security practices represent 13.2% of the dataset. This category encompasses incidents where inadequate security measures, such as weak passwords or unpatched systems, contribute to unauthorized access and data compromise.

Actions According to Severity Level of Data

Our analysis involved a meticulous examination of the "action taken" on data breach based on "severity level" of data.

Fig -2 : Area Chart representing Action taken w.r.t Severity level



To visually depict the distribution of actions taken and severity levels in the data, we opted for an area chart. This chart type allows for a clear representation of trends over time or categories, providing a comprehensive overview of the data.

Key Findings:

Blocked Actions:

- The area chart highlights the instances where the "blocked" action was taken in response to high, medium, and low-severity breaches. This insight is crucial for understanding the proactive measures implemented to mitigate the impact of potential threats.

Ignored Actions:

- Instances of "ignored" actions are depicted, showcasing situations where a decision was made to overlook or not actively respond to certain breaches. The chart offers insights into the distribution of such decisions across severity levels.

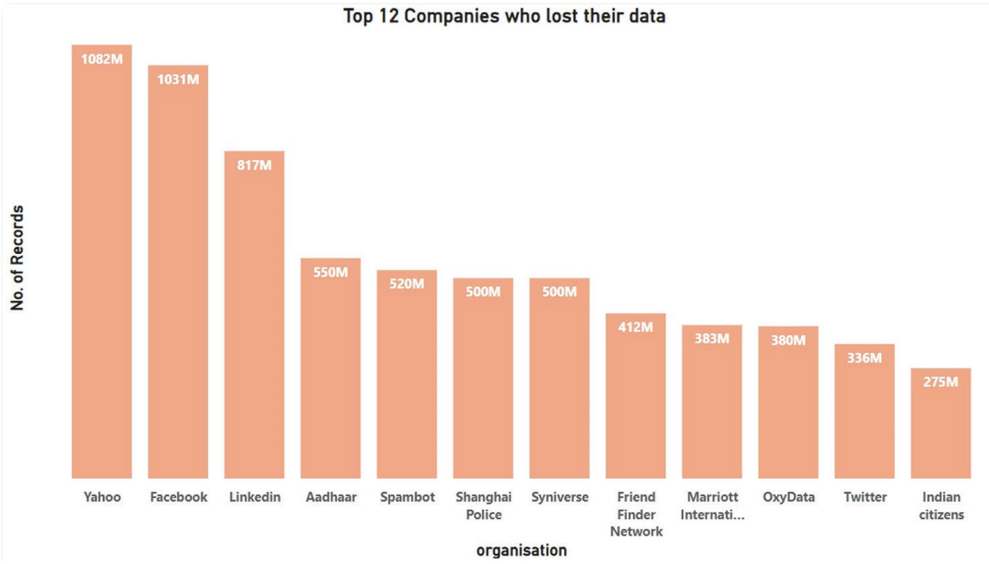
Logged Actions:

- The area chart represents the frequency of "logged" actions, indicating incidents where details of the breach were recorded for analysis or future reference. This type of action is essential for understanding incidents that might not have immediate consequences but warrant documentation.

Analysis of Companies who Lost Their Data

To gain insights into the organizational impact, we utilized the "organization" data to study the frequency of data breaches across different entities. We employed data visualization techniques to present a clear and concise overview of the distribution of data breaches among various organizations.

Fig – 3 : Bar chart representing top 12 companies who lost their data



A bar chart was constructed using the "organization" column to visually represent the frequency of data breaches across different entities. Each bar on the chart corresponds to a specific organization, with the height of the bar indicating the number of reported data breaches affecting that organization. This visual representation allows for a quick assessment of which organizations are more susceptible to data breaches.

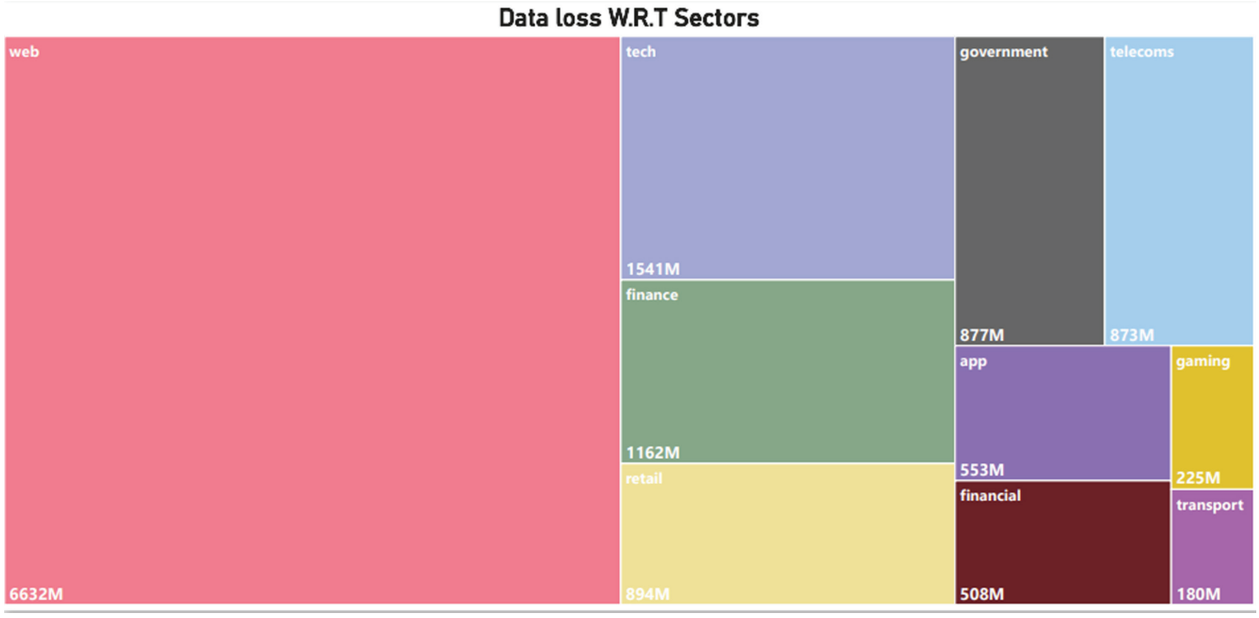
Key Observations

Upon analysis of the bar chart, several key observations emerge. The substantial data losses from major platforms such as Yahoo, Facebook, and Linked In underscore the pervasive nature of cyber threats and the challenges faced by globally recognized entities in safeguarding user data. Furthermore, the inclusion of Aadhar, Spambot, and Shanghai Police in the dataset highlights the diverse range of organizations susceptible to data breaches, emphasizing the need for a comprehensive and inclusive approach to Cybersecurity.

Sector-wise Data Breach Analysis

To analyze the sector-wise distribution of data breaches, the distribution of data breaches across various sectors was taken into consideration. The objective is to create a tree map that visually represents the frequency of data breaches in different sectors, providing a clear overview of the sectors most susceptible to such incidents.

Fig – 4 : Tree map - sector-wise distribution of data breaches

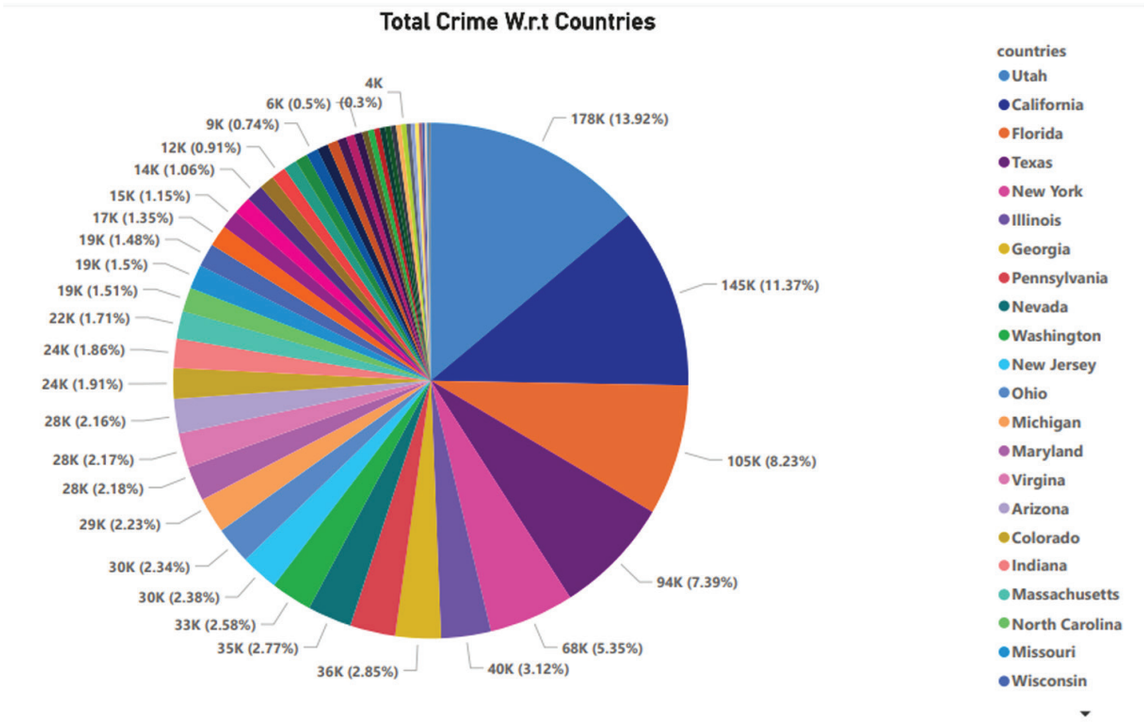


The tree map vividly illustrates the distribution of financial losses resulting from data breaches across different sectors. Sectors with larger blocks indicate higher monetary impacts, emphasizing the sectors that may have experienced more severe financial consequences due to Cybersecurity incidents.

Cyber Crime rate w.r.t Countries

The analysis involves creating a pie chart based on the "total crime", which represents the cumulative number of reported data breaches in each country. The pie chart serves as a visual representation of the distribution of data breaches, highlighting the proportion of incidents attributed to each country.

Fig – 5 : Total Crime rate w.r.t Countries



The pie chart analysis reveals insights into the distribution of data breaches across different countries. It allows us to identify countries with a higher incidence of data breaches and those that may be comparatively more resilient. The findings contribute to our understanding of the geographical patterns of cyber threats, offering valuable information for policymakers, organizations, and individuals seeking to enhance Cybersecurity measures.

Data Protection and Privacy:

Safeguarding Information in the Digital Age: Safeguarding sensitive information in the digital age is a top priority. This section focuses on encryption technologies, data breaches and incidents, and privacy regulations and compliance. It explores the role of encryption in securing data, the nature and implications of data breaches, and the global regulatory environment governing data protection and privacy.

1. **Encryption Technologies:**

   - **Overview:** Encryption is a foundational technology that uses complicated algorithms to change data into a secure, unreadable state. It functions as a strong protection mechanism, rendering intercepted data indecipherable to unauthorized parties.

   - **Encryption Types:** The two most common types are symmetric and asymmetric encryption. Asymmetric encryption involves a pair of public and private keys, whereas symmetric encryption use a single key for both encryption and decryption. Transport Layer Security (TLS) and Pretty Good Privacy (PGP) are two popular encryption methods.

2. **Data Breaches and Incidents:**

   - **Nature of Data Breaches:** Data breaches occur when sensitive information is accessed, acquired, or disclosed without authorization. Cyber criminals use vulnerabilities in databases to obtain access, jeopardizing the confidentiality and integrity of stored data.

   - **Implications:** The consequences of data breaches are numerous, ranging from financial losses and reputational harm to legal ramifications. Breached data frequently contains personally identifiable

information (PII), financial information, or corporate secrets.

3. **Privacy Regulations and Compliance:**
   - **Global Regulatory Environment:** Individual rights are protected by privacy legislation, which govern the acquisition, processing, and storage of personal data. Notable regulations include the European Union's General Data Protection Regulation (GDPR), the United States' Health Insurance Portability and Accountability Act (HIPAA), and Canada's Personal Information Protection and Electronic Documents Act (PIPEDA).
   - **Compliance Difficulties:** Organizations must install strong data protection measures, undertake regular risk assessments, and develop transparent data-handling policies in order to comply with privacy rules. Noncompliance can result in serious consequences.

As technology advances, so do the challenges connected with data security and privacy. A comprehensive strategy includes using encryption technologies, building effective incident response strategies for data breaches, and adhering to privacy standards. Organizations may build a secure digital environment that respects individual privacy and instills trust in data handling methods by prioritizing these characteristics.

Individual and Organizational Cyber Hygiene

Prioritizing Security Practices: Developing strong individual and organizational cyber hygiene is critical in minimizing risks and building defenses against evolving threats. This section emphasizes password management, software updates and patching, and secure communication practices as crucial components of cyber hygiene.

1. **Password Management:**
   - **Importance:** Passwords are the first line of security against unwanted access. Effective password management entails setting strong, unique passwords for each account and updating them on a regular basis.
   - **Recommended Practices:** Password hygiene requires the use of multi-factor authentication (MFA), the use of password managers, and the avoidance of easily guessable passwords. Passwords should be changed on a regular basis, and they should not be shared.
2. **Software Updates and Patching:**
   - **Importance of Updates:** Software updates and patches fix vulnerabilities and flaws in applications and operating systems. Failure to update can expose systems to cyber attackers' exploitation.
   - **Patch Management Practices:** Organizations should build effective patch management methods to apply updates as soon as possible. Automated technologies can help to speed up this process by assuring timely patch deployment and reducing the window of vulnerability.
3. **Secure Communication Practices:**
   - **Encryption in Communication:** Secure communication practices entail encrypting data during transmission to protect it from interception. This is particularly important in online transactions, email communication, and data exchange over networks.
   - **Virtual Private Networks (VPNs):** Using VPNs can improve secure communication by establishing encrypted tunnels over public networks, protecting data from eavesdropping. This is especially important in distant work circumstances.

Cybersecurity Education and Awareness:

Empowering Through Knowledge: Education and knowledge about cybersecurity play a pivotal role in creating a resilient and security-conscious digital community. This section explores individual and organizational training programs, promoting digital literacy, and awareness campaigns for responsible online behavior. It highlights the importance of continuous learning, interactive training modules, digital literacy initiatives, and appealing awareness campaigns to empower individuals and organizations with the knowledge required to navigate the growing cyber landscape safely.

1. **Individual and Organizational Training Programs:**
   - **Continuous Learning:** As cyber risks evolve, individuals and businesses must continue to educate themselves. Training programs include a wide range of topics, from detecting phishing attempts to comprehending the most recent Cyber security developments.
   - **Interactive Training Modules and Simulated Cyber Attack Scenarios:** Interactive training modules and simulated cyber attack scenarios allow individuals to apply theoretical knowledge in a practical situation, improving their capacity to respond effectively to real-world threats.
2. **Promoting Digital Literacy:**
   - **Understanding Digital dangers:** Digital literacy projects aim to improve people's understanding of digital dangers and safe online practices. This involves determining trustworthy sources, identifying potential hazards, and comprehending the consequences of revealing personal information online.
   - **Educational Initiatives:** Including digital literacy in educational curricula and promoting easily

accessible online resources help to create a more aware and watchful digital population.

3. **Responsible Online Behavior Awareness Campaigns:**
   - **Promoting Responsible activity:** Awareness programs try to encourage responsible online activity by emphasizing the potential implications of cyber risks. This includes supporting ethical behavior in digital places, respecting the privacy of others, and comprehending the consequences of one's online actions.
- **Appealing Campaigns:** To reach a diverse audience, creative and engaging awareness campaigns use a variety of platforms such as social media, posters, and webinars. These initiatives aim to make cyber security education more relatable and approachable.

A proactive approach to Cyber security is fostered by emphasizing individual and corporate cyber hygiene habits and investing in Cyber security education and awareness programs. These approaches collectively contribute to the development of a resilient digital ecosystem in which individuals are equipped with the knowledge and habits required to safely navigate the growing cyber landscape.

Conclusion

In conclusion, this research paper advocates for a holistic approach to Cybersecurity and responsible online behavior. By understanding the complex dynamics of cyber threats, implementing robust Cybersecurity measures, and fostering a culture of accountability and ethical conduct, individuals and organizations can contribute to building a secure digital ecosystem. The interplay between technical defenses, user awareness, and education is crucial for developing a resilient digital future where the benefits of technology can be harnessed without compromising security and integrity.

References

1. https://joncosson.com/cyber-security-basics-for-beginners
2. https://digitalsecurityworld.com/bp-digital-security/
3. https://www.knowledgehut.com/blog/security/ethical-hacking-vs-cyber-security
4. https://www.kaggle.com/datasets/joebeachcapital/worlds-biggest-data-breaches-and-hacks
5. https://www.kaggle.com/datasets/husseinsalaudeen/us-internet-crime-2020-202

Parichay Maharaja Surajmal Institute Journal of Applied Research

Growth & Future Prospects of Msme in India

Ms. Anshu Punshi[1]

Abstract

In recent times, the significance of micro, small, and medium enterprises has been acknowledged in developed as well as developing nations for its noteworthy role in fulfilling several social and economic goals, including increased employment, output, export promotion, and entrepreneurship. They are essential to the industrial growth of any nation. Due to its significant growth contribution, the MSME sector is a crucial pillar of the Indian economy. With the nation moving toward an objective of quicker and more inclusive growth, this sector even acquires greater significance today. By the end of 2024, the MSME has the potential to contribute to the planned National Manufacturing Policy's goal of increasing the manufacturing sector's GDP contribution from 14% to 27%. This article aims to examine the current state of MSMEs' performance in India and their prospects going forward. It is determined that this industry has a major impact on the nation's manufacturing production, employment, and exports.

Keywords: MSME, Growth, India

Introduction

The Micro, Small, and Medium-Sized Enterprises (MSME) sector in India has become a very active and aggressive section of the financial system past fifty years. Their productive, efficient, flexible, and creative entrepreneurial mindset also makes a substantial contribution to the expansion of the financial system. It is also acknowledged for generating jobs and for contributing significantly to industrial production and exports. They have distinctive benefits because of its size, including a high employment-capital ratio, a shorter incubation period, a concentration on small selling space, and a reduced investment requirement.

They also assure a fairer allocation of the nation's revenue, simplify the efficient deployment of possessions like wealth and expertise that could or else be underutilized, and promote the progress of enterprise in the industrial sector. The MSME in India is highly diverse in terms of business scale, product and service variety, and technological advancements. It makes a major contribution to the nation's advancement in society and economy as a supporting unit for large companies.

With an enormous network of around 30 million units, approximately 70 million jobs, over 6000 items produced, and a direct and indirect contribution of approximately 44% of output and 38% exports, the MSME is a crucial pillar of the Indian economy. Owing to the country's ongoing attempts to attain a more rapid and comprehensive economic plan, this industry even gains more importance. Furthermore, the MSME sector may assist in achieving the National Manufacturing Policy's goal of increasing its manufacturing sector's gross domestic product (GDP) contribution from 16% to 27%. The present study's objective is to focus on the efficacy of MSME's in India today, highlighting the main barriers to their growth and the steps taken by the government and institutions to address them.

Literature Review

According to Mali (1998), in the existing environment of globalization, it is significant for Small Manufacturing enterprises to precisely improvise in the fields of diversification of products, Marketing field, Development of infrastructure, upgradation of technology, and management. Additionally, new small and medium-sized enterprises could have to relocate from an area with modest development to one with a rapid expansion.

Bala Subrahmanya (2004) focused on the sector's vulnerability to the effects of local and global changes. As per the survey, the small sector has been lagging in the count of unit growth, employment, production and exports. Bala focused on how new possibilities and markets can be created for the small-scale industries sector as a result of the policy reforms. He insisted that to make the Indian small industry competitive on a global scale and contribute to the nation's revenue and jobs, the emphasis should be shifted to technological advancements and improvement of the financial infrastructure.

The variables GDP, SSI production, and SSI exports were taken into account by Bargal et al. (2009), who also assessed the pre- and following-liberalization process SSI evaluations. The analysis showed that, compared to the years before the reform, the annual average growth rate of the various SSI metrics had decreased throughout the 1990s. There is no lead-lag link between the GDP of the Indian economy, exports, and output in the small-scale sector.

[1] *Assistant Professor, Department of Business Administration, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

In 2011 , Dixit and Pandey tried to examine the links between SMEs' output, exports, employment, and investment, as well as with the nation's rate of employment, value of exports Gross domestic product, and over the years 1974 to 2007. The research showed an optimistic correlation between the production of India's GDP and Small manufacturing enterprises.

Singh et al. (2012) examined the small businesses' performance in the nation and concentrated on legislative deviations that have provided this sector with fresh prospects. The results of their analysis show that the SSI industry has progressed in terms of output, employment levels, and SSI units. The report advised that to increase SSI and hit the growth technological advancement should arise, and financial infrastructure should be strengthened.

According to Venkatesh and Muthiah (2012) , SMEs are now a major force behind future development and are playing a critical role in the industrial sector. They emphasized the need to support the SME sector for the country's overall economic health. The literature mentioned above sheds insight on the performance, development, and issues faced by MSMEs in the Indian economy and encourages more study in this area.

Research Objective

The primary purpose of the research is to analyse the general expansion and advancements in the MSME industry in India. Nevertheless, the manuscript emphasises on the subsequent areas also:

1. The MSME's main obstacles
2. Performance of MSMEs in India & and prospects.
3. Governmental programs to revitalize the MSME industry

Research Methodology

The study is classified as "Exploratory". The main source of data for the study is secondary data covering the period from 2010 to 2022, or 12 years. The Government of India's Annual Report on MSMEs served as the source of all financial information. In addition to several periodicals and magazines, Articles and data from various journals and publications were also used in the preparation of this study.

Conceptual Background

Small-Scale Industrial Unit: As of March 31, 2001, an industrial qualifies as a small-scale industrial unit if its investment in fixed assets, plant, and equipment—whether owned, leased, or acquired through hire purchase—does not exceed Rs. 100 lakhs.

Businesses that manufacture items for any of the sectors specified in the first schedule of the Sectors Development and Regulation Act of 1951 are considered to be part of the MSME sector. Moreover, the companies that are involved in both production and service provision, regardless of their legal structure. MSMEs fall into the following categories under the MSME Act 2006.

Existing MSME Classification			
Criteria : Investment in Plant & Machinery or Equipment			
Classification	Micro	Small	Medium
Mfg. Enterprises	Investment<Rs. 25 lac	Investment<Rs. 5 cr.	Investment <Rs. 10 cr.
Services Enterprise	Investment<Rs. 10 lac	Investment< Rs. 2 cr.	Investment<Rs. 5 cr.

Major Players

Notwithstanding their flaws, SMEs have made a substantial contribution to exports and technological growth. They have a presence in practically all of India's major industries, such as computer software, bioengineering, electricals, sporting goods, electronics, plastics, electro-medical devices, apparel and textiles, etc.

Evaluation of Performance of MSME

All MSMEs must submit an Entrepreneurs Memorandum (Part: I) with a District Industries Centre (DIC) under the Act's regulations. The relevant entrepreneur must submit an Entrepreneurs Memorandum (Part: II) after the start of the project. There is a procedure in place for the DICs to register small-scale industrial enterprises before the passage of the MSMED Act. Table No. 1 lists the Micro, Small, and Medium-sized Business (MSMB) entrepreneurs by category for the five years ending in 2021–22.

Table:1

Year/Category	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Micro	4,21,516	21,47,908	13,44,612	18,70,932	16,32,644	74,17,612
Small	70,866	2,16,558	1,66,259	2,41,187	2,22,226	9,17,096
Medium	2,631	8,592	6,584	9,426	8,506	35,739
Total	4,95,013	23,73,058	15,17,455	21,21,545	18,63,376	83,70,447

Source: Development Commissioner, GoI.

With an overall average growth rate of 10.14%, the average growths of the three categories are 191986, 24875, and 1360, which was respectively. Medium-sized businesses experienced the largest growth, at aproximately 44%. Aproximately 16,33,000 small- and medium enterprises with a 9% annual expansion rate existed by the end of 2022.

The nation's policymakers have always prioritized financing the MSE sector, as seen by the announcements made recently in the stimulus package during the global economic downturn as well as by subsequent Union Budgets, Monetary, and Credit policies. In the next five years, the Indian government has made a firm commitment to double the amount of financing flowing to this industry. In light of this, the RBI has ordered scheduled commercial banks to attain, among other things, a 20% annual lending growth to the MSE sector, as proposed by the Prime Minister's Task Force.

Contribution of MSME Sector in Total GDP

It can be witnessed from Table 1 that the MSME contribution to total GDP has increased to 35.13 to 37.33 percent during the study period. The average contribution of MSME in total GDP is 37.75 percent in which the manufacturing sector contribution is 7.46 percent and the service sector (MSME) contribution is 28.96 percent. This indicates that the service sector contribution is more than the manufacturing sector of MSME in total GDP contribution.

Obstacles MSMEs Face

It is possible to divide the MSME issues into two categories: internal and external. External difficulties are those that are commonly experienced by all businesses in the industry and are out of their control, whereas internal problems are those that arise from an enterprise's internal course of management and are specific to a single unit. (Desai, V. 2006).

Key Challenges Faced By the MSME Sector

- Lack of availability of adequate and timely credit
- Limited access to equity capital
- Procurement of raw materials at a competitive cost
- Problems with storage, design, packaging, and product display
- Lack of access to global markets
- Inadequate infrastructure facilities, including power, water, roads, etc
- Low technology levels and lack of access to modern technology
- Lack of skilled manpower for manufacturing, services, marketing, etc
- Multiplicity of labor laws and complicated procedures associated with compliance with such laws.

Despite the various challenges it has been facing, the MSME sector has shown admirable innovativeness, adaptability, and resilience to survive the recent economic downturn and recession.

Conclusions

The development of both industrialized and developing nations has been increasingly influenced by micro, small, and medium-sized enterprises. Their significant impact on GDP, employment, output, turnover, and exports might be used to evaluate this. Due to MSMEs' growing importance the Indian economy, which at independence was in a state of stagnation, was able to pick up enough speed. The current analysis found that the number of MSMEs is continuously increasing. The nation's manufacturing production, market value of fixed assets, and employment have all greatly benefited from these industries' remarkable rise. India's Gross Domestic Product benefits greatly from the substantial contribution of MSMEs. MSMEs in India face several challenges, including a lack of timely and sufficient banking services, finance, non-availability of suitable technology, ineffective marketing due to limited resources and non-availability of skilled manpower. Considering that MSME businesses create more jobs and boost the GDP, it is clear that the government has to do more to support and grow this industry.

Reference

1. Mali, D.D. (1998), 'Development of Micro, Small and Medium Enterprises of India: Current Scenario and Challenges', SEDME (Small Enterprises Development, Management and Extension) Journal, Vol.25, No.4.

2. Bala Subrahmanya, M. H. (2004), 'Small Industry and Globalization: Implications, Performance and Prospects', Economic and Political Weekly, Volume XXXIX, No.18, pp 1826-1834.

3. Bargal, H., Dashmishra, M., and Sharma, A. (2009), 'Performance Analysis of Small Scale Industries - A Study of Pre-liberalization and Post-liberalization period', International Journal of Business and Management, Vol 1, No 2.

4. Dixit, A. and Pandey, A.K. (2011), 'SMEs and Economic Growth in India: Cointegration Analysis', The IUPJournal of Financial Economics, Vol. IX, No. 2, PP. 41-59

5. Singh, R., Verma, O.P., and Anjum, B. (2012), 'Small Scale Industry: An Engine of Growth', Zenith International Journal of Business Economics & Management Research, Vol.2 Issue 5. Online available at http://www.zenithresearch.org.in

6. Venkatesh, S. and Muthiah, K. (2012), 'SMEs in India: Importance and Contribution', Asian Journal of Management Research, Vol. 2, No. 2.

7. Lubina Zaidi, Problems affecting the growth of small and Medium Enterprises (SMEs) in India, International Conference on Technology and Business Management March 18-20, 2013, pp.413- 422

8. The SME Whitebook 2011-2012 (Businessworld),New Delhi.

9. Raju, Dr. B. Yerram and Nataraj, P.R. Mohan (2008): Small and Medium Enterprises in India (Indian Institute of Banking and Finance)

10. Small medium business development chamber of India , available at http://www.smechamberofindia.com/About_MSMEs.aspx

11. Annual Report on MSME, Government of India, 2011-12 & 2012-13. 12. Report of the working group on MSMEs growth in 12th five year plan 2012-17, GoI.

Parichay Maharaja Surajmal Institute Journal of Applied Research

A Review of Mental Health Reflection Through Social Media Network

Dr. Shruti Bhuttani[1]

Abstract

As individuals grow increasingly conscious of the importance of mental health, diagnosing disorders of the mind is becoming an increasingly important issue. Many psychiatrists have difficulty recognising mental illness in people they treat because mental diseases are complicated and can be difficult to diagnose. This makes it thought-provoking to start effective remedy before it's too late. Even while community networking has become a part of daily life for individuals, it has produced a setting where further information is available on a patient's psychological health condition may be accessible. This investigation was performed as a systematic review of the literature (SLR), which is an approach for locating, assessing, and interpreting current resources in order to respond to a series of research concerns. The determination of this research is to address interrogations about text-oriented diagnosis of mental ailments from the online interactions among individuals with illnesses of the mind. The outcomes demonstrate that depression may be identified early on through online activities. because these individuals utilise social media in a way that exhibits specific traits. Because of the limited number of research utilising a character-based method, RNN and other deep learning models are used in research. on the early identification of depression patients, according to this SLR. However, the goal of this research is to discover a technique that will be more successful.

Keywords: Mental health, Systematic Literature Review (SLR), Social Media, Depression, Stress

Introduction

Depression is a prevalent disease that affects a large number of individuals in our modern culture. Parekh defines depression as a medical disease that unpleasantly impacts a individual's way of thinking, feeling, and/or behaving. According to statistics given by the WHO, there were about 322 million instances in the period of 2015, with approximately 788.000 cases ending in suicide 2 (World Health Organization data). Regardless matter how severe a mental illness seems to be, there is still a stigma associated with it in society, where having a mental illness is seen as a mark of weakness and may possibly lead to exclusion from social situations. Rendering to one research, although people recognise depression as a significant problem that requires treatment, they rely that it is less treatable than other mental illnesses. This may lead individuals suffering from mental illnesses to be hesitant to seek professional assistance, resulting in an even smaller number of people being exposed to appropriate therapy. When it comes to battling depression, about 75 percent to 85 percent of those suffering from the condition do not get adequate treatment. 4.

Aside from giving psychiatrists and/or psychologists more information before making decisions, given the current state of affairs in which people often use social media to vent about their problems. Using information obtained from the subject's social media platform, this might potentially result in the likelihood of early discovery which could be used to guide treatment. It is supported by research that indicates students suffering from depressed symptoms use the internet much more than students who do not suffer from the condition. 6. This motivates researchers to develop the most effective technique for early diagnosis of depression 7 8. In order to create a more precise and trustworthy early detection system, this SLR looks for and assesses text-based techniques that may be used for the prompt identification of depressive disorders based on social networking posts.

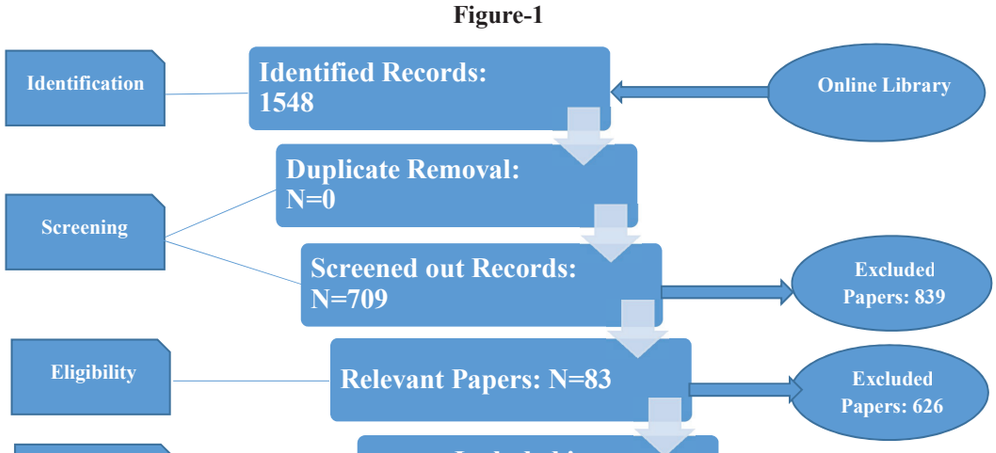
Methods

The author originally opted on a series of inquiries to investigate something would take action as a roadmap used for the period of this study in order to successfully achieve the aim of this SLR. Given that the goal of this investigation is to deal with the issue in question of "what factors may affect the use of social media as a tool for early identification of depression," the subsequent set of examination queries has been developed:

- **RQ1** – What are the drawbacks of detecting depression using a text-based approach?
- **RQ2** – Which text-based methods are best for identifying early signs of depression in children?

[1] *Assistant Professor, Department of Business Administration, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

Figure-1



Source: Created by author

To ensure that the whole procedure and the records used in this study are appropriately documented and organised, the PRISMA framework will be used as the primary framework for the current literature review. Figure 1 depicts the steps taken throughout this investigation.

Articles utilised in this research were found by searching several electronic databases, including websites such as Direct Science (www.sciencedirect.com), The dl.acm.org, International Educational Exchange Explore Online Library (ieeexplore.ieee.org), Springer Link (link.springer.com), and Emerald Insight (www.emeraldinsight.com) (www.emeraldinsight.com). After constructing a base search query among these libraries that includes terms like ["depression" or "depressed,"] [,"mental*." or "disorder,"], [,"detection,"] and ["social media,"], By amending the query to correspond with each platform's supported format, an assortment of records can be identified and processed further in the next phase. Information that are not research publications published in English will be eliminated from inclusion during this step of the process, which involves further screening the collection of records using a number of criteria. Additional elements that might exclude a search result from being featured in this evaluation are:

- Articles Published Prior to the year 2015;
- Articles Published twice in the same journal;
- Other depression-related problems not addressed in the search results

In the subsequent stage, abstract screening will be used to further select manuscripts that don't fit any of the requirements for exclusion which will be performed after the first level. Separately record's complete manuscript will be tested first, and if it is available, the writer will look through its abstract to determine whether or not the contents of the document in contextual is in line with the goal of this investigation, and whether the data might potentially answer the predefined study inquiry. If a record meets both of the previously mentioned requirements, it will be considered for insertion in this review. Table 1 shows the specifics of the outcome obtained throughout the procedure of document looking up.

Table-1: Selected Records

Source	Found	Sample	Selected
Science Direct	449	35	6
IEEE	1	0	-
ACM Digital Library	181	24	6
Emerald	146	3	-
Springer	771	21	5
Total	1548	83	15

Source: compiled by author

Results

A List of Papers that have been published

A total of 17 research publications have been selected for additional analysis in this study based on the information displayed in Table 1.

Table 2 indicates that there are 17 publications in all.

Table 2. List of Paper Publications

Source	Year	Title
Science Direct	2015	Detecting Suicidality on Twitter
Science Direct	2017	Psychiatric Symptom Recognition Without Labeled Data Using Distributional Representations of Phrases and on-line Knowledge
Science Direct	2018	A Large-Scale Social Media Corpus for the Detection of Youth Depression
Science Direct	2018	An Automated Psychometric Analyzer based on Sentiment Analysis and Emotion Recognition for Healthcare
Science Direct	2019	Detecting Arabic Depressed Users from Twitter Data
Science Direct	2020	Predicting Anxiety, Depression and Stress in Modern Life using Machine Learning Algorithms
ACM Digital Library	2018	Beyond the Coded Gaze: Analyzing Expression of Mental Health Illness on Instagram
ACM Digital Library	2018	Individual Informatics in Social Contexts: Towards Technology Design that Facilitates the Social Ecologies of Long-Term Mental Health Care
ACM Digital Library	2019	Exploring Indicators of Digital Self-Harm with Eating Disorder Patients: A Case Study
ACM Digital Library	2019	Leveraging Routing Behavior and Contextually-Filtered Features for Depression Detection among College Students
ACM Digital	2019	Prediction of Mood Instability with Passive Sensing
ACM Digital Library	2018	Interpersonal Contexts for Personal Informatics: In the direction of creating technological solutions that enhance the social environments of long-term mental health care
ACM Digital Library	2019	Who is the “Human” in Human-Centered Machine Learning: The Case of Predicting Mental Health from Social Media
Springer Link	2015	Teenager’s Stress Detection Based on Time-Sensitive Micro-blog Comment/Response Actions
Springer Link	2016	A Systematic Exploration of the Micro-blog Feature Space for Teens Stress Detection
Springer Link	2017	Latent Sentiment Topic Modelling and Nonparametric Discovery of Online Mental Health-related Communities
Springer Link	2020	Recognising Depression Through Psycholinguistic Patterns in Texts on Social Media
Springer Link	2020	Using Temporal Psycholinguistic Cues to Estimate Suicidal Intent

3.2 The Findings of Different Studies

After completing the portion of the study, the writer will review all record in turn then make an effort to get information from each one that was mentioned in Table 2. Gathering of data is carried out in order to respond to the pre-set research questions (RQ) mentioned in the first section of chapter 2.

When developing a text-based method for depression diagnosis, what are the difficulties you face?

Table 3. Challenges with text-based depression identification

No	Issue	Number of papers	Study identifiers
1	Nothing to confirm the accuracy of the data	1	10
2	Dataset is not able to provide significant features.	2	10, 19
3	Ethical concerns	6	10, 16, 17, 18, 20, 21
4	Incomplete data	4	11, 12, 18, 19
5	Stigma and/or lack of awareness	3	14, 20, 21
6	Error intensity	2	16, 17
7	Excessive simplification	1	21

Table 3 displays the level of difficulty indicated in the records that were chosen. Despite the fact that not every article mentioned a problem that occurred during the study procedure, it demonstrates that the majority of concerns are centred on ethical issues. This includes every aspect of data security and accessibility, as well as privacy protection. Information on mental health and disorders is deemed sensitive, even though the majority of the data is published publicly on social networking sites.

Following additional investigation, it seems that the majority of the problems listed in Table 3 are linked to one another in some way. For example, record number 10 said that owing to ethical issues, it is impossible to determine whether or not the Twitter user is really suffering from depression in this instance. As a result, data collection is accomplished via the use of APIs, which may result in a poor sample characteristic and/or data dispersion.

3.2.2. Which text-based technique is best for identifying depression at an early stage of the illness?

Table 4. Techniques for text-based identification of depression

No	Method	Study identifiers
1	Scikit-Learn Toolkit machine classification	10
2	Classifiers	11, 14, 19, 23
3	Support Vector Machine	13, 14, 15, 22
4	Unsystematic Forest	14, 15
5	Probabilistic classifier	14, 15, 22, 24
6	Grouping Approach	15, 24
7	Association rule mining	19
8	Logistic	22
9	Gaussian Process	22
10	Time Frequency – Reverse Document Frequency	25
11	BiLSTM + Attention	26

Table 4 lists the techniques that were utilised in the text-based approach for depression identification that were investigated. While classifiers, support vector machines (SVM), and probabilistic approaches (Bayesian, Hierarchical Dirichlet Process, and so on) are the most common techniques employed in the set of chosen articles, the best results are achieved by combining BiLSTM and Attention model. However, because of the differences in the datasets used and the differences in the issues addressed, this may be an overgeneralization.

Experiment

According to the findings of the literature study, the BiLSTM + Attention model works well on textual material that is linked to depressive disorders. Even if the outcome of the research may have been acceptable, there are some concerns about the model that was used in the study.

They suffer from an issue known as Recurrent Neural Network Model (RNN) based model, where they have difficulty in determining the appropriate context of a word in a lengthy phrase. This is due to the nature of RNNs, which analyse data in accordance with the order of words in a sequence, which causes this. Aside from making it more difficult to discover context, the nature of RNN makes it more time-consuming to train the model.

Another problem with this model is the manner in which it approaches a series of actions. Contrary to its name, BiLSTM really outfits a sequence processing model that courses a arrangement in both ways, thereby rendering this ideal to be not truly bidirectional but rather asymmetrical. Since a result of the fact that it approaches a text from both directions because there is probably more information available, it gets more harder for this algorithm to detect the context of a word. This encourages the author to carry out an experiment utilising a model based on the BERT model to significantly increase the model's accuracy. It has been demonstrated that BERT not only operates faster, but it also solves the two aforementioned issues. However, the conducted experiment will not be repeated; rather, it will only be used as a preliminary experiment to confirm the outcomes of this literature study.

This research utilised a BERT-based classification ideal that has previously been pre-trained by Google 27 for categorization. The model is intended to support transfer learning, it was put through a pre-training process that involved using the English Wikipedia and BookCorpus to help the model learn the language. The model is now ready to facilitate transfer learning. Because this training procedure consumes a significant amount of resources and time, a pre-trained model can be more effectively adjusted for a specific downstream application. An example dataset scraped from Reddit 28 will be used to fine-tune the model's performance in terms of depression detection in this experiment.

The fact that BERT is built by piling encoders on top of one another suggests that it has a self-attention layer. Self-attention layers speed up training and enhance model performance, but at the cost of restricting the model's ability to interpret sequences longer than 512 tokens. The most optimal solution to this problem is found to be to reduce the sequence to the necessary length of 29 characters, or less. However, it is possible that some important information may be lost as a result of this. This experiment will use extractive summarization to longer sequences than the last experiment, which is a fresh method. To alter the sequence's duration, use more than 512 tokens. The unprocessed data and the outcome that was produced by combining it and the

summary result are both displayed in Table 5 to illustrate the summarization outcome.

Table 5. Both unprocessed and condensed data

Before	I need to change my depression medication, but I'm terrified. Celexa 40mg has been a part of my life for more than 18 years. The current situation is untenable; something must be done; yet I'm terrified that things will become much worse!! My doctor prescribed me Prozac for a month, but I didn't take it because I was afraid. Earlier last month, he gave me a new medication called Trintellix, which I haven't taken yet. I'm so close to losing my mind that I'm afraid to try anything new for fear that it won't work (or, God forbid, makes me worse...), and then I'll know for sure that I won't make it. What should I do in this situation? Is there anybody else who has been too afraid to attempt new or different medications??
After	I'm so close to losing my mind that I'm afraid to try anything new for fear that it won't work (or, God forbid, makes me worse.....) and then I'll know for certain that I won't make it through.

For the purpose of summary, this experiment chose the extractive approach over the abstractive way in order to preserve as much information as possible without changing any element of the sequence. BERT-for-extractive-summarization 30 is a BERT-based model that use BERT's text embedding before passing it through the K-Means method to cluster the embeddings, resulting in an extractive summarised sequence. It is necessary to configure the text summarization such that it has a ratio of 0.2, a minimum length of 20 typescripts, and a maximum length of 500 typescripts in order to do data preparation. The exemplary will initially reduce the records to 20% of its original underdone form before eliminating any orders that are less than 20 characters and lengthier than 500 characters.

As previously mentioned, the model is then fine-tuned by post-training it on the pre-processed data, which comprises of 3412 data points, with 1884 figures points categorised as disheartened and the supplementary 1528 data points characterized as controller, as described before. A learning rate of 2x10-5 is used in conjunction with an epsilon of 1x10-8, and the process is repeated until 4 epochs have been reached with a batch size of 8, after which it is assessed using a train-test split of 90 percent to 10%. After then, another ten percent of the training set is isolated to serve as the validation set, which helps to prevent the model from being overfit. The model, as exposed in Figure 2, attains a preparation accuracy of 99 percent and a justification accurateness of 92 percent on the fourth part epoch; however, as shown in Figure 3the validation loss on the fourth epoch was 0.40, whereas the training procedure had a loss value of 0.02. The model has to be fine-tuned for a total of 20 minutes, or around 5 minutes every epoch. The model produces a satisfactory result when evaluated on the test set, but it is believed that the summarization configuration has an impact on some element of the model; as a consequence, it is essential to identify the optimum configuration for performance optimization.

Conclusion

This SLR examines the present operation of a written method for early sadness diagnosis, which is being used to identify the condition. Following a search of online databases, the study began with 1548 records obtained, this, following additional exclusion based on a set of criteria, was reduced to 709 articles. These were then further clarified by label and abstract to produce 17 comprised articles, every one of whose materials would be looked at in order to address the research topic that this study aims to address.

The results comprehensive evaluation of the literature indicate that the three utmost concerning subjects are (1) data scarcity, (2) moral concerns, and (3) stigma and/or ignorance regarding mental health.. This research also provided an overview of the techniques presently in use for text-based depression identification that are currently available. It is noteworthy that the BiLSTM + Attention technique, despite the fact that it has been stated that (1) Classifiers, (2) Support Vector Machine, and (3) Probabilistic Classifier are the most common approaches, is the one that produces the greatest results, according to this study.

Taking a BERT-based model and fine-tuning it for depression detection, this research also suggests a novel approach for dealing with lengthy sequences by summarising the text before feeding it into the model, which was used in this work as an experiment. Current results outperform any text-based depression detection model, but future improvement of the performance of this model will need additional optimization, such as summarizer setup or hyper-parameter tweaking.

References

1. World Health Organization. Department of Mental Health, Substance Abuse, World Health Organization, World Health Organization. Department of Mental Health, Substance Abuse. Mental Health, World Health Organization. Mental Health Evidence, & Research Team. (2005). Mental health atlas 2005. World Health Organization.
2. Prince, M., Patel, V., Saxena, S., Maj, M., Maselko, J., Phillips, M. R., & Rahman, A. (2007). No health without mental health. The lancet, 370(9590), 859-877.
3. Boorse, C. (1976). What a theory of mental health should be. Journal for the Theory of Social Behaviour. Keyes, C. L., & Lopez, S. J. (2009). Toward a science of mental health. Oxford handbook of positive psychology, 89-95.

4. Abuse, S. (2013). Mental Health Services Administration. Results from the, 2, 013.
5. National Institute of Mental Health (US). (1972). Career Opportunities for Psychiatrists at the National Institute of Mental Health.
6. Warr, P. (1987). Work, unemployment, and mental health. Oxford University Press.
7. Bracken, P., Bracken, P. J., & Thomas, P. (2005). Postpsychiatry: Mental health in a postmodern world. Oxford University Press.
8. World Health Organization, World Health Organization. Department of Mental Health, Substance
9. Abuse, World Psychiatric Association, International Association for Child, Adolescent Psychiatry, & Allied Professions. (2005). Atlas: child and adolescent mental health resources: global concerns, implications for the future. World Health Organization.
10. Frank, R. G., & McGuire, T. G. (2000). Economics and mental health. Handbook of health economics, 1, 893-954.
11. Kumar, A., & Nayar, K. R. (2021). COVID 19 and its mental health consequences. Liu, J. J., Bao, Y., Huang, X., Shi, J., & Lu, L. (2020). Mental health considerations for children quarantined because of COVID-19. The Lancet Child & Adolescent Health, 4(5), 347-349.
12. Usher, K., Durkin, J., & Bhullar, N. (2020). The COVID-19 pandemic and mental health impacts. International Journal of Mental Health Nursing, 29(3), 315.
13. Yao, H., Chen, J. H., & Xu, Y. F. (2020). Patients with mental health disorders in the COVID-19 epidemic. Cullen, W., Gulati, G., & Kelly, B. D. (2020). Mental health in the COVID-19 pandemic. QJM: An International Journal of Medicine, 113(5), 311-312.
14. Moreno, C., Wykes, T., Galderisi, S., Nordentoft, M., Crossley, N., Jones, N., ... & Arango, C. (2020).
15. How mental health care should change as a consequence of the COVID-19 pandemic. The Lancet Psychiatry. Li, W., Yang, Y., Liu, Z. H., Zhao, Y. J., Zhang, Q., Zhang, L., ... & Xiang, Y. T. (2020). Progression of mental health services during the COVID-19 outbreak in China. International journal of biological sciences, 16(10), 1732.
16. Zhai, Y., & Du, X. (2020). Addressing collegiate mental health amid COVID-19 pandemic. Psychiatry research, 288, 113003.
17. Arango, C., Díaz-Caneja, C. M., McGorry, P. D., Rapoport, J., Sommer, I. E., Vorstman, J. A., ... & Carpenter, W. (2018). Preventive strategies for mental health. The Lancet Psychiatry, 5(7), 591-604.
18. Tsakalidis, A., Liakata, M., Damoulas, T., & Cristea, A. I. (2018, September). Can we assess mental health through social media and smart devices? Addressing bias in methodology and evaluation. In Joint European Conference on Machine Learning and Knowledge Discovery in Databases (pp. 407-423). Springer, Cham.
19. Gao, J., Zheng, P., Jia, Y., Chen, H., Mao, Y., Chen, S., ... & Dai, J. (2020). Mental health problems and social media exposure during COVID-19 outbreak. Plos one, 15(4), e0231924.
20. Naslund, J. A., Aschbrenner, K. A., McHugo, G. J., Unützer, J., Marsch, L. A., & Bartels, S. J. (2019).
21. Exploring opportunities to support mental health care using social media: A survey of social media users with mental illness. Early intervention in psychiatry, 13(3), 405-413.
22. Ni, M. Y., Yang, L., Leung, C. M., Li, N., Yao, X. I., Wang, Y., ... & Liao, Q. (2020). Mental health, risk factors, and social media use during the COVID-19 epidemic and cordon sanitaire among the community and health professionals in Wuhan, China: cross-sectional survey. JMIR mental health, 7(5), e19009.
23. Berryman, C., Ferguson, C. J., & Negy, C. (2018). Social media use and mental health among young adults. Psychiatric quarterly, 89(2), 307-314.
24. Chancellor, S., & De Choudhury, M. (2020). Methods in predictive techniques for mental health status on social media: a critical review. NPJ digital medicine, 3(1), 1-11.
25. Naslund, J. A., Bondre, A., Torous, J., & Aschbrenner, K. A. (2020). Social media and mental health: benefits, risks, and opportunities for research and practice. Journal of technology in behavioralscience, 5(3), 245-257.
26. Valdez, D., Ten Thij, M., Bathina, K., Rutter, L. A., & Bollen, J. (2020). Social media insights into US mental health during the COVID-19 pandemic: longitudinal analysis of twitter data. Journal of medical Internet research, 22(12), e21418.
27. O'Reilly, M., Dogra, N., Hughes, J., Reilly, P., George, R., & Whiteman, N. (2019). Potential of social media in promoting mental health in adolescents. Health promotion international, 34(5), 981-991.
28. Meier, A., & Reinecke, L. (2020). Computer-mediated communication, social media, and mental health: A conceptual and empirical meta-review. Communication Research, 0093650220958224.
29. Frey, W. R. (2018). Humanizing digital mental health through social media: centering experiences of gang-involved youth exposed to high rates of violence. Biomedical informatics insights, 10, 1178222618797076.

30. Yazdavar, A. H., Mahdavinejad, M. S., Bajaj, G., Romine, W., Sheth, A., Monadjemi, A. H., ... & Hitzler, P. (2020). Multimodal mental health analysis in social media. Plos one, 15(4), e0226248.

31. Chancellor, S., Birnbaum, M. L., Caine, E. D., Silenzio, V. M., & De Choudhury, M. (2019, January). A taxonomy of ethical tensions in inferring mental health states from social media. In Proceedings of the conference on fairness, accountability, and transparency (pp. 79-88).

32. Viner, R. M., Gireesh, A., Stiglic, N., Hudson, L. D., Goddings, A. L., Ward, J. L., & Nicholls, D. E. (2019). Roles of cyberbullying, sleep, and physical activity in mediating the effects of social media use on mental health and wellbeing among young people in England: a secondary analysis of longitudinal data. The Lancet Child & Adolescent Health, 3(10), 685-696.

33. Chancellor, S., Baumer, E. P., & De Choudhury, M. (2019). Who is the" human" in human-centered machine learning: The case of predicting mental health from social media. Proceedings of the ACM on Human-Computer Interaction, 3(CSCW), 1-32.

34. Bekalu, M. A., McCloud, R. F., & Viswanath, K. (2019). Association of social media use with socialwell-being, positive mental health, and self-rated health: disentangling routine use from emotional connection to use. Health Education & Behavior, 46(2_suppl), 69S-80S.

35. McCrory, A., Best, P., & Maddock, A. (2020). The relationship between highly visual social media and young people's mental health: A scoping review. Children and Youth Services Review, 115, 105053.

36. Nicholas, J., Onie, S., & Larsen, M. E. (2020). Ethics and privacy in social media research for mental health. Current Psychiatry Reports, 22(12), 1-7.

37. Kaur, P., Dhir, A., Alkhalifa, A. K., & Tandon, A. (2021). Social media platforms and sleep problems: a systematic literature review, synthesis and framework for future research. Internet Research. Moura, I., Teles, A., Silva, F., Viana, D., Coutinho, L., Barros, F., & Endler, M. (2020). Mental health ubiquitous monitoring supported by social situation awareness: A systematic review. Journal of biomedical informatics, 107, 103454.

38. Moura, I., Teles, A., Silva, F., Viana, D., Coutinho, L., Barros, F., & Endler, M. (2020). Mental health ubiquitous monitoring supported by social situation awareness: A systematic review. Journal of biomedical informatics, 107, 103454.

39. Lima Filho, S. P., Oliveira, J., & da Silva, M. F. Detection of Depression Symptoms using Social Media Data. Abkenar, S. B., Kashani, M. H., Mahdipour, E., & Jameii, S. M. (2021). Big data analytics meets social media: A systematic review of techniques, open issues, and future directions. Telematics and Informatics, 57, 101517.

40. Zakaria, M. R. Mohd Razif Zakaria, Normah Mustaffa, Emma Mirza Wati Mohamad, Source Credibility In Health Promotion Information Dissemination: A Systematic Review (SLR)–Palarch's Journal of Archaeology of Egypt/Egyptology 17 (9).

41. Li, A., Jiao, D., & Zhu, T. (2018). Detecting depression stigma on social media: A linguistic analysis. Journal of affective disorders, 232, 358-362.

42. Bratman, G. N., Anderson, C. B., Berman, M. G., Cochran, B., De Vries, S., Flanders, J., ... & Daily, G. C. (2019). Nature and mental health: An ecosystem service perspective. Science advances, 5(7), eaax0903.

43. Evans, T. M., Bira, L., Gastelum, J. B., Weiss, L. T., & Vanderford, N. L. (2018). Evidence for a mental health crisis in graduate education. Nature biotechnology, 36(3), 282-284.

44. Venkatesh, A., & Edirappuli, S. (2020). Social distancing in covid-19: what are the mental health implications?. Bmj, 369.

45. Zhai, Y., & Du, X. (2020). Mental health care for international Chinese students affected by the COVID-19 outbreak. The Lancet. Psychiatry, 7(4), e22.

Parichay Maharaja Surajmal Institute Journal of Applied Research

Recommendations to Entrepreneurs and Small Businesses A Context for SMES in the New Normal

Dr Nisha Solanki[1]

Abstract

The aim of this paper is to provide recommendations to entrepreneurs and small businesses emanating from the Covid-19 pandemic experience. The paper presents a discussion of entrepreneurial opportunities and lessons from the Covid-19 pandemic. If the world seizes the opportunities presented by this crisis to address fundamental challenges in the global economy, the new normal can be one that emphasizes resilience to change and unexpected shocks, embraces the possibilities offered by digitalization, prioritizes inclusiveness, and leads to sustainable growth. Additionally, the paper describes small business challenges associated with the Covid-19 pandemic. In the description, the authors touch base on the economic damage experienced by businesses while taking note of the new normal. The paper concludes by recommending entrepreneurs on how critical thinking will enable their business to survive during any similar Covid-19 eras.

Keywords: Barriers, Business Opportunities, Challenges, Covid-19, Entrepreneurship, Digitalization, New Normal, Pandemic

Introduction

The Covid-19 pandemic has tested entrepreneurs' determination and ability to adapt to a changing economic climate. They faced challenges such as directing their businesses away from bankruptcy, dealing with low discretionary income, and customer uncertainty. The lack of pragmatic business recommendations exacerbated these challenges. Entrepreneurs should assess their adaptability, volatility, and preparedness for business success. Support structures should effectively monitor the entrepreneur component, identify and implement business recommendations, and re-evaluate their strategies to improve preparedness. This paper provides recommendations for small businesses and entrepreneurs to improve adaptability in their entrepreneurship journey, especially during the Covid-19 pandemic.

2. Covid 19 pandemic and small business operations

Scholars have long debated the source of entrepreneurial success, with factors such as culture, education, and training being proposed as determinants. The Covid-19 pandemic has challenged these notions, with new evidence from both developed and developing countries revealing how small businesses are coping with the challenges. Despite the challenges, small businesses have been thriving and successful entrepreneurial ventures, especially in developing countries. These entrepreneurs have used resilience business strategies to survive the pandemic, challenging the belief that small businesses tend to collapse due to poor strategic planning. This paper aims to explain how small businesses are coping with the challenges and turning new opportunities into sustainable business ideas.

3. Business opportunities presented by Covid 19 pandemic

SMEs including the self-employed account for 90% of businesses globally and provide 70% of employment worldwide. These businesses, typically entrepreneur led, are threatened by the Covid-19 pandemic, meaning that millions of jobs are at risk. Understandably, there are several resilience strategies in how entrepreneurs navigated the crisis through being agile, adaptive, and exploring new opportunities, utilizing government support, giving back to society, and even harbouring growth ambitions beyond the pandemic. A range of opportunities will be discussed, importantly the nature of new business opportunities in the pandemic fall broadly into five categories: (1) digitalization, (2) health and well-being, (3) local vs. global, (4) sustainability and (5) new business models and repositioning of the business. Such opportunities explain entrepreneurship success over a series of lockdowns, while other entrepreneurs expanded their product/services to new types of customer. The following section of the paper describes each of the opportunities in turn.

[1] *Assistant Professor, Department of Business Administration, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

3.1 Digitalization

The pandemic has led to a shift towards online products, services, and delivery, with opportunities for businesses in online security, digital payments, marketing, and artificial intelligence. Entrepreneurs can develop online educational courses, direct sales, and increase social awareness, while also handling crisis communication for Covid-19-affected entities.

3.2 Health & well-being

Entrepreneurs see opportunities in Covid-19-related physical health offerings, healthcare services, tele-medicine, mental health, and well-being. Opportunities include increased awareness of mental well-being, demand for tele-counselling, stress-mitigating offers, and digitally supported healthcare services. These opportunities include health equipment and Covid-19-safe products, as well as telemedical services.

3.3 Shift from global to local

Digitalization is enabling entrepreneurs to reach international customers, but the pandemic has increased awareness of domestic markets and demand for domestic manufacturing and supply chains. Opportunities include local farmer collaborations and restoring production processes.

3.4 Sustainability and inclusion

Remote work offers sustainability benefits, reduced commuting and travel, and increased awareness about waste reduction and circular economy business models. Digitalization can help social inclusion by providing cheaper access to services and products in remote areas.

3.5 New business models and repositioning of the business

Entrepreneurs are exploring opportunities to adapt to Covid-related changes by developing new offerings, leveraging digitalization, and repositioning businesses. Examples include consulting, online courses, and new branding concepts for hospitality, travel, and real estate.

4. Extent of Covid-19 impact on small businesses

The economic damage caused by Covid-19 and lockdowns is difficult to quantify, but it has led to a decline in incomes, rising unemployment, and widespread business closures, particularly affecting micro enterprises in South Africa. The crisis has highlighted the economic disadvantaged, particularly informal sector workers and rural microenterprises. The recovery phase must ensure popular support for open economies, protect and enable SMMEs, and raise awareness about available financial and other support.

4.1 Business approaches to Covid-19

During the pandemic, small and medium-sized companies responded by protecting employees and customers, communicating closure plans, and seeking support from government and industry groups. However, some adopted retreating strategies, such as reducing assets or laying off employees. Resilience involved shifting sales to online channels and creating innovative products. Smaller micro enterprises were more likely to adopt agile responses, but also more retreating strategies. Larger businesses were more likely to adopt a resilient approach, highlighting their greater capacity to survive the storm. Assistance programs aim to guide at-risk rural micro enterprises towards a more resilient strategy.

5. Four main characteristics of the 'new normal' in the micro enterprise environment

If the world seizes the opportunities presented by this crisis to address fundamental challenges in the global economy, the new normal can be one that emphasizes resilience to change and unexpected shocks, embraces the possibilities offered by digitalization, prioritizes inclusiveness, and leads to sustainable growth.

5.1 Resilience

Countries learned an important lesson in the early days of the pandemic as they rushed to strengthen their small enterprises. It became clear that fostering business resilience in good times would help firms ride out crises, reduce the likelihood of bankruptcy and improve the state of the economy. Diversifying, connecting with business support organizations and building financial buffers can help contribute to increased SME resilience. For small businesses that are active in international supply chains, the resilience of their relationship with buyers and suppliers will also matter greatly.

5.2 Digital

Digital technologies were flourishing before the pandemic hit. During lockdowns, whole parts of the world's economies shifted onto digital platforms. Teleworking, remote learning, teleconferencing, online health services, e-commerce and digital payments really made the world go round in many regions in the first half of 2020. In the months and years to come, digital facilities will no longer be optional. Consumers, clients, business partners and workers will come to expect them as a matter of course. Yet the move towards digital technologies must be accompanied by technical assistance, skill building and infrastructure support to ensure that it is inclusionary and equitable.

5.3 Inclusive

As is often the case with crises, Covid-19 has put the spotlight on those who are economically disadvantaged, such as informal sector workers, migrants and people in microenterprises. Inclusiveness globalization was already a concern before the pandemic. There is now a unique opportunity to rebuild the international order together, in a way that leaves no one behind. It will be crucial to ensure that the recovery phase lifts all the boats to maintain popular support for open economies.

5.4 Sustainable

Climate change was ranked as the top global business risk in a 2019 survey of insurance industry experts. The high perceived likelihood and severe impact of climate-related risks have ranked them highest in the World Economic Forum's Global Risks Report. There is no reason to believe that climate risks will abate once the health crisis ends. Sustainability will therefore continue to be important in the new global economy. Retrofitting for both Covid-19 sanitary requirements and environmental friendliness may be a wise move.

6. Digital transformation a key feature

Digitalization is the use of digitized products or systems to create new organizational procedures, business models, and commercial offerings. Technologies like websites, social media, and wearable gadgets have helped firms innovate and exploit new market opportunities. However, firms have not fully appreciated the benefits of digitalization, and the Covid-19 pandemic is accelerating its adoption. Small enterprises may adopt new technologies to improve efficiency and competitiveness. The pandemic's contagious nature may accelerate the digitalization process, as businesses' security depends on the effective use of digital technologies.

6.1 Drivers to Digitalization

6.1.1 Shift to remote working and remote operations

Digitalization is the use of digitized products or systems to create new organizational procedures, business models, and commercial offerings. Technologies like websites, social media, and wearable gadgets have helped firms innovate and exploit new market opportunities. However, firms have not fully appreciated the benefits of digitalization, and the Covid-19 pandemic is accelerating its adoption. Small enterprises may adopt new technologies to improve efficiency and competitiveness. The pandemic's contagious nature may accelerate the digitalization process, as businesses' security depends on the effective use of digital technologies.

6.1.2 Paperless offices and paperless organizations

Businesses are adopting digital technologies to improve operational efficiency and competitiveness. The Covid-19 pandemic has heightened the urgency of digitalization, making it attractive to businesses. Tools like laptops, storage devices, tablets, smartphones, and wireless broadband are becoming available for digitalization and paperless organization. This reduces reliance on paper documents, provides more access to information, and saves costs. Digitalization eliminates human errors and allows firms to become paperless organizations, saving money and promoting creativity.

Table 1: Covid-19 A driver of digitalization.

Pre-Covid-19 forces	Covid-19-effects as drivers	Results
• Financial and economic pressures to move to a paperless organization and remote working	• Many firms have been forced to transition to remote working and become increasingly paperless.	• Global economic realities have changed. Digitalization is regarded as critical. Increasing the infrastructure and conditions for digitalization and electronic commerce.
• In both public and commercial companies, there is a greater acceptance of paper-based to electronic-based processes, methods, and routines.	• Processes, methods, and routines are being shifted from paper to electronic at a faster rate.	
• Video conferencing and internet meeting tools should be used.	• Domestic and internal travel restrictions, as well as social alienation, drove companies to function online rather than face-to-face. Nonetheless, video conferencing and online meeting platforms have helped to alleviate or at least partially eliminate quarantine constraints and impacts.	

Source: Developed for this paper

6.2 Barriers to Digitalization

Digitalization in businesses faces challenges such as technical infrastructure, institutional limits, security and privacy concerns, and organizational-level constraints. Resource restrictions, bureaucratic processes, and lack of top management commitment hinder digitalization. Some people believe digital platforms are inferior to physical offices for social bonding and innovation. Digital working can also generate concerns about monitoring, insecurity, work-life balance, and employee resistance. Security is a concern, as electronic communication is vulnerable to hacking and internet disruptions.

Table 2: Classification of post-Covid-19 barriers to digitalization

Barriers	Barriers/impediments in the adoption of digital technologies	Breaking down the barriers and meeting new challenges
Technology infrastructure.	• The technological and digital barriers that exist between cities and rural areas, as well as between industrialized and developing countries, impede the scale-up of digitalization.	• To enable digitization, funds should be invested in digital infrastructure.
Institutional constraints.	• Formal institutions (such as national rules and regulations) might make it difficult to accept new technologies. • Institutional barriers such as a lack of government support for digitization, a poorly constructed or designed education system geared toward digitalization, and a limited government skill formation program on digitalization are all examples of institutional impediments. • Businesses have limited or no access to remote banking due to a lack of a consistent Internet connection. • A lack of government infrastructure investment • Policy churn and incoherence, as well as a desire to return to the familiarity of the past.	• At the national level, there is an investment in human capital. • Creating a culture of online payment.
Security and privacy concerns	• Workers and other stakeholders have privacy concerns. • Uncertainty regarding security dangers and unprotected virtual environments. • Lack of trust among businesses in their ability to survive cyberattacks and hackers. • There's a chance of widespread or regional internet interruptions.	• Small firms will benefit from a national investment in security training, support, and assurances. • More awareness of paradigm-threatening hazards; contingency planning
Organizational level constraints	• Lack of financial resources to cover the upfront costs of new technology investments. • a lack of technical know-how to help with digitalization • Inflexibility/reluctance to change in the workplace (typified by hard-to-change organizational routines, process and traditional ethos of the organization). • Lack of awareness of new technologies and possible benefits from digitalization among businesses. • Lack of understanding of the security and safety requirements that come with digitizing corporate activities. • Face-to-face encounters are said to underpin the firm's business approach. • Nostalgia. • Employee resistance. • Productivity being undermined by employee stress brought about by the intensification of work.	• Creating a support network for businesses to help them through the change. • Recognize that the benefits and costs of digitization are distributed unevenly. • There is a need for immediate action to address this. Organizational 'good faith'; understanding that digitization may be jeopardized if past rules of fair play are broken.

Source: Developed for this paper

7. Survival strategies in the covid-19 era

The following points have become prominent areas worth each entrepreneur's investment for survival:

- Individual preparedness: An entrepreneur must invest on becoming adaptive to the changing external environment from a mindset perspective. Resultantly, an entrepreneur who is adequately prepared has greater adaptive skills. The adaptiveness of the entrepreneur becomes of critical value in times when the business has to adapt to changes in response to external forces.
- Organizational agility: With economies becoming more turbulent while posing threats of unprecedent scenarios, it is unequivocal that entrepreneurs must invest in an adaptive business management style. This would allow quick responses to any external threats, inherently improving the survival chances of the business.

- Digitalization: The fourth industrial revolution has set its course and the need to be part of a digital environment cannot be overemphasized. Entrepreneurs must transform their operations into a digital oriented workspace.
- Innovative: In times of crisis, the ability of the business to be innovative will increase the chances of survival. When other businesses collapsed due to weak capital market performance, some e-commerce businesses thrived in the midst of the crisis. The secret was a combination of digitalization opportunities and being innovative.
- Diversify: Depending on the size of the business, it is important for entrepreneurs to diversify their services including those within an area of specialization. This would reduce the extent of risk they would encounter in the event that one of their offerings is affected.

8. Conclusion

The need to constantly evolve as a business is of immense value and cannot be overemphasized. Stagnation coupled with failing to be adaptive is a means to business failure. Digitalization has proved to be pivotal in improving the survival chances of business. Empowerment of entrepreneurs and staff through the upskilling of key skills will aid with the preparation for the unknown future 'tussles' such as those caused by Covid19. It is therefore, recommended to invest in an adaptive mindset nurtured by an adaptive management style as this increases the chances of survival. Thereafter, the entrepreneur must invest resources towards digitalizing their services.

References

1. Aceto, G., Botta, A., MArchetta, P. & Persico, V. (2018). A comprehensive survey on internet outages. *Journal of Network and Computer Applications,* 113, 36-63.
2. Al-Lamki, R., Al-Sumri, M., Al-Ismaili, S. & Al-Busaidi, K.A. (2016). An expert system to determine the probability of success and readiness in entrepreneurship. *International Journal of Computing & Information Sciences,* 12(2), 189-196.
3. Hodder, A. (2020). New Technology, Work and employment in the era of Covid-19: Reflecting on legacies of research. *New Technology, Work and Employment*, 35 (3), pp. 262-275.
4. Hudson, A. (2012). Is the paperless office possible? Why it is so hard to go paperless? Retrieved from http://news.bbc.co.uk/1/hi/programmes/click_online/9735525.stm. [Accessed 25 January 2022].
5. Nheta D.S., Shambare, R., Sigauke, C. & Tshipala, N. (2020). Entrepreneurship gaps framework model: An early-stage business diagnostic tool. *The Southern African Journal of Entrepreneurship and Small Business Management,* 12(1), 1-7.
6. Olugbola, S.A. (2017). Exploring entrepreneurial readiness of youth and start-up success components: Entrepreneurship training as a moderator. *Journal of Innovation & Knowledge,* 2, 155-171.
7. Rosalsky, G. (2020a). Is remote work here to stay? Retrieved from https://www.npr.org/sections/money/2020/06/30/882834590/is-remote-work-here-to-stay. [Accessed 23 January 2022].
8. Rosalsky, G. (2020b). Why Remote Work Sucks, According To Science. Retrieved from: https://www.npr.org/sections/money/2020/04/28/846671375/why-remote-work-sucks-according-to-science. [Accessed 23 January 2022]
9. Ruiz, J., Soriano, D.R. & Coduras, A. (2015). Challenges in measuring readiness for entrepreneurship. *Management Decision,* 54(5), 1022-1046.
10. Smith, J. (2019). Why businesses need to go paperless now. Retrieved from https://www.itproportal.com/features/why-businesses-need-to-go-paperless-now/ [Accessed 25 January 2022].
11. Wilson, M.E & Chen, H.L. (2020). Re-starting travel in the era of Covid-19: Preparing anew. *Journal of Travel Medicine,* 27 (5), pp 108-116.

Parichay Maharaja Surajmal Institute Journal of Applied Research

A Study on the Role Played by MNC'S in the Development of Indian Economy

Dr. Aanchal Tehlan[1]

Abstract

After the New Industrial arrangement 1991, globalization, progression and privatization changed the Indian economy. Numerous Multinational Companies began coming in India and soon India transformed into business process re-evaluating centre point. The corporate culture of these MNCs impacted the functioning society of Indians. The business sectors are being overwhelmed with a great deal of brands from old and new brands from inside the nation and multinationals who have wandered into India because of globalization of Indian economy. This has brought about a battle among contenders for endurance and development and furthermore drove them to offer some incentive to their item for consumer loyalty's through quality and administration. The new monetary change, famously known as, Liberalization, Privatization and Globalization (LPG model) . Inviting and making ways for MNCs to work in India will overhaul the monetary headway of the country. Hon. PM Shri Narendra Modi's drives for 'Make in India' and 'Ability India' campaigns, inviting Global Companies to place assets into India similarly as attempts to unravel the Foreign Direct Investments rules will obviously make India a most adored goal of MNCs. In this paper, an endeavor has been made to comprehend the impact of MNCs the Indian economy and culture on the functioning style.

Keywords*:* Globalization, MNCs, Make in India, Indian economy

Introduction

The MNCs expect a huge part in the money related headway of making countries. These are adventures or relationship with organizations spread across more than one country on an overall scale. India is a home to different worldwide associations since the country's market was changed in 1991. India houses predominant piece of overall associations hailing from the United States. There are similarly overall associations from various countries. MNCs sway the Indian economy in a positive way yet also expect a negative capacity in influencing the economy. Regardless of the way that MNCs give capital, they might cut down domestic hold assets and theory rates by covering contention through select creation concurrences with the host legislatures. The domestic market is increasing because of the increasing of standard of living. The multinationals are trying their best to bring in more modernize product at a higher price in the Indian consumer market. The Indian consumer is very price conscious yet is willing to pay for quality products and comfort. Impact of the entry of multinational companies in the Indian Market and economic growth of India is a topic of great importance, as the entry of Multinational in India will have a great effect on the Indian producers as they have to make efforts to exist in this competitive environment. To overcome this competition Indian producers will have to have greater innovation and creativity so that the products can match those made by the multinationals. Many countries are opening their borders and reducing trade barriers. Multinational corporations are taking advantage of these inexpensive trade barriers and moving in to these developing economies. Although MNCs have become omnipresent in the developing world, there has always been an uncertainty about them, in both positive and negative ways. Most of the MNCs take advantage of developing countries. They can be guilty of making pollution or doing human rights abuse. Nevertheless, laborers are paid low wages, as there are few or no trade unions to protect their rights or negotiate with the MNCs. Thus, the theoretical dispute over the effects of MNCs on Indian Economy is mirrored in the conflict. Apparently, two broad positions can be derived from these differences of opinion- the positive and negative. Some proponents have developed arguments that emphasize the positive results of foreign direct investment (FDI) by MNCs. They are willing to admit some gains from FDI. On the contrary, others are unwilling to accept a positive role for multinational capital under any circumstances.

1. Objectives of the Study

To address the gap, the current study aims to examine the impact of MNCs on Indian Economy. To achieve the main objective, the study covers the following specific purposes:

- To identify the overall positive impact of MNCs on Indian Economy.

[1] *Assistant Professor, Department of Computer Applications, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

- To analyze the role of foreign capital in the growth of Indian economy
- To suggest measures for the policy makers in the context of MNC

Literature Review

Most of the Indian consumer belongs to the lower and lower middle class for mass consumption. They are many big enterprises in India who are successfully marketing their products to the Indian masses. They will in due course of time face the challenges that will be posed by the multinationals. The upper and middle classes are also consumers of costly goods, which are essential for their comfort and luxury. The multinational will be targeting the consumer of all classes. Indian consumer segment is broadly segregated into urban and rural markets and is attracting marketers from across the world. The sector comprises of a huge middle class, relatively large affluent class, and a small economically disadvantaged class, with spending anticipated to more than double by 2025. India stood first among all nations in the global consumer confidence index with a score of 133 points for the quarter ending September 2016.

Further, in the discretionary spending category, 68 per cent respondents from India indicated the next 12 months as being good to buy, thus ensuring once again that India leads the global top 10 countries for this parameter during the quarter. Global corporations view India as one of the key markets from where future growth is likely to emerge. The growth in India's consumer market would be primarily driven by a favorable population composition and increasing disposable incomes. A recent study by the McKinsey Global Institute (MGI) suggests that if India continues to grow at the current pace, average household incomes will triple over the next two decades, making the country the world's fifth-largest consumer economy by 2025, up from the current 12th position. 8 India's robust economic growth and rising household incomes are expected to increase consumer spending to US$ 3.6 trillion by 2020.

The maximum consumer spending is likely to occur in food, housing, consumer durables, and transport and communication sectors. The report further stated that India's share of global consumption would expand more than twice to 5.8 per cent by 2020.

Research Methodology

The present study is based on secondary data available in different books, journals, articles, research papers, and internet source also. The main objectives of the present study are to examine MNCs are contributing to economic development and to analyze the role of FDI in Economic development. The present study attempts to analyze the relationship between foreign companies' mode of entry with FDI and economic variables .

Benefits of MNCs Operation in India

The role of MNCs varies from country to country. The positive case stresses the net positive benefits of FDI:

Economic Growth

MNCs can be considered as a major stimulus to economic growth in developing countries. According to orthodox liberals, inward FDI provides external financing to compensate for inadequate amounts of local savings and foreign aid. In general, FDI inflows are more stable and easier to service than commercial debt or portfolio investment. In the 1990s, FDI in developing countries accounted for average $150 billion a year. However, in 2005, net flows of FDI to developing countries averaged around $334 billion annually, which shows a dramatic increase of FDI in developing countries. According to UNCTAD World Investment Report, FDI in developing countries increased in 2010 and stands as nearly $574 billion annually. FDI is thought to bring certain benefits to national economies. It can contribute to gross domestic product (GDP), gross fixed capital formation and balance of payments. There have been empirical studies indicating a positive link between higher GDP and FDI inflows.

2. Export-based Industrialization

Building export capacity is very important for developing countries if they want to benefit fully from international trade and investment opportunities. Therefore, the government must seek to develop a regulatory framework that could assist local and regional areas in designing and implementing active policies for building export competitiveness. The countries in East and Southeast Asia, who had attracted MNCs as part of their export-oriented strategies, provided clear evidence that MNCs could vitally assist in export-based industrialization in developing countries. 12 MNCs helped such successful integrators, for example, Malaysia and Thailand become a part of "global commodity chains" linking developing country producers to advanced-country consumers.

3. Capital Formation

Capital represents an essential economic asset in developing countries. A significant benefit of MNCs is their injection of capital into a developing country, bringing financial resources otherwise unavailable through their own capital and access to international capital markets. An important share of the total capital flow to developing countries comes from MNCs' investments; estimations vary from 14.9% to 51.5% of the total flows to developing countries. Studies show that foreign multinationals are indeed more productive, pay higher wages and are more export intensive than local firms. MNCs contribute important foreign exchange earnings through their trade effect of generating exports. By producing goods for export, the balance of payments of the developing countries

enhances the economic growth, becoming a more attractive prospect for further investment as well as contributing to the growing role of developing countries in world trade. MNCs provide immediate access to foreign markets and customers which would take domestic firms years of investment and effort to acquire for themselves.

4. Technology/R&D

Technology development and work processes improvement differ greatly in developing countries, and even in some cases between regions. For example, Bangkok or the South of Thailand is more developed than some Northern areas. MNCs contribute greatly to providing the foundation for technological development. A vital resource gap filled by the MNCs, as proponents say, is technology. 13 The desire to obtain modern technology is perhaps the most important attraction of foreign investment for developing countries. MNCs allow developing states to profit from the sophisticated research and development carried out by the multinationals. They make available technology that would otherwise be out of the reach of developing countries.

5. Cleaner Environment

FDI through MNCs may help increase the level of overall domestic environment. MNCs are more likely to produce a cleaner rather than a more despoiled natural environment. MNCs from developed countries, preferring to have a single set of rules for all competitors, may consequently prefer that developing countries have environmental standards similar to those in the developed countries. In addition, MNCs tend to bring their higher pollution control and energy-efficiency standards with other countries when setting up operations overseas.

6. Poverty Alleviation

MNCs are the key to poverty reduction. The multinational corporations encourage people to produce a certain product, and these products make the workers' life improved. For example, the DaimlerChrysler project in Brazil. Daimler Benz, in 1991, looked for ways to use renewable natural fibbers in its automobiles. For the Brazilians, life changed dramatically for the better; children were able to attend school, health facilities have improved, and people are more active in local politics. The liberals believe that industrialisation through MNCs combined with a free-market economy has allowed many previously agrarian based economies to grow out of poverty. "The international operation of these corporations is consistent with liberalism but is directly counter to the doctrine of economic nationalism and to the views of countries committed to socialism and state intervention in the economy". 14 Liberals show that for those that have chosen to become integrated into the world economy, the rewards have been significant. In fifty years, Taiwan has transformed from an agrarian economy which was poorer than much of SubSahara Africa to a country now as rich and prosperous as Spain.

7. Employment Generation

MNCs play a role in creating new kind of jobs and therefore can contribute to employment generation and the increase of quality of life of the employees in developing countries. Those who argue for MNCs, state that MNCs generate employment worldwide. Of the 73 million jobs created through MNCs, only 12 million are in developing countries amounting to 2% or 3% of the world's workforce. MNCs account for onefifth of all paid employment in non-agricultural sectors and creates many jobs in the manufacturing industries, especially where technology is concerned. In addition, MNCs have a positive impact on welfare of the employees. Supporters say that the creation of jobs, the provision of new and better products, and programs to improve health, housing and education for employees and local communities improve the standard of living in the developing countries. Moreover, having a closer look at empirical data it gets clear that foreign-owned and subcontracting manufacturing companies in developing countries tend to pay higher wages than the local firms.

Negative Impact of MNCs

In reverse, this positive role of MNCs can be disputed by those who claim that the net effect of MNCs investment is negative for India. Critics of the multinationals have challenged this positive view of the role of MNCs. The discussions of negative impact of MNCs are presented as follows:

1. Prevent Autonomous Development

"Dependency is a situation in which a certain number of countries have their economy conditioned by the development and expansion of another…placing the dependent countries in a backward position exploited by the dominant countries". Dependency theorists understand the current underdevelopment of developing countries to be a process within the framework of the global capitalist system. They understand global capitalism as a process that generates wealth and development in the industrialized world at the expense of creating poverty as an intentional by-product of the West and perpetuating underdevelopment in developing countries. According to dependency theorists, MNCs prevent the developing countries from achieving genuine autonomous development. For example, MNCs prevent local firms and entrepreneurs from participating in the most dynamic sectors of the economy; they use local capital rather than bringing in new capital from the outside; they increase income inequalities in the host country; and they use inappropriate capital-intensive technologies that contribute to unemployment.

2. Outflow of Capital

Some critics believe that FDI in developing countries leads to an outflow of capital. Capital flows from South to North through profits, debt service, royalties, and fees, and through manipulation of import and export prices. Such reverse flows are, in themselves, not unusual or improper. Indeed, the reason for investments is to make money for the firm. What certain critics argue, however, is that such return flows are unjustifiably high.

3. Exploit Worker

Critics charge that many MNCs enter developing countries to exploit their cheap labour and abundant natural resources. Companies such as Reebok, Nike, and Levi Strauss have exploited the human labour in Indonesia. Workers live in deteriorating, leaky, mosquito – infested apartments and only earn a mere $39 a month for producing thousands of products worth well over $100 each. Indonesia's economy is booming because of massive direct foreign investment while the cheap labour is suffering from inhumane living conditions and illegal wages. MNCs adversely affect their workers, provide incentives to worsen working conditions, pay lower wages than in alternative employment, or repress worker rights. Critics also argue that MNCs do not benefit developing countries labour.

4. Environment Pollution

Regarding the environment, international big business is both the creator of pollution and the only resource available for its clean-up. The MNCs' record on pollution pales in comparison with those of many local businesses and state-owned enterprises: Critics allege that MNCs have – in part due to their sheer size – caused significant environmental damage in developing countries. Because MNCs have operated for a long time and in so many countries, there undoubtedly have been cases where these criticisms are accurate. In all parts of the world, mining operations have generated severe environmental degradation and pollution, including the discharge of toxic substances into river systems, large volume waste disposal, the inadequate disposal of hazardous wastes, and the long run impacts of poorly planned mine closure.

5. Tax Evaders

The issue of tax evasion by MNCs continues to generate acrimonious debate, despite guidelines produced by the Organisation for Economic Cooperation and Development (OECD). Multinational 18 corporations protest that they pay their taxes responsibly. For example, the U.S. Chamber of Commerce in Bangkok claimed a few years ago that MNCs paid 70% of Thailand's corporate taxes, implying considerable tax evasion by the locals.

6. Organized Crime

The introduction of famous brands into developing countries by MNCs has provided an irresistible lure to criminal organizations to branch out into this lucrative area of crime. In East Asia - the hotbed of counterfeiting - criminal organizations involved in gambling, prostitution, smuggling, narcotics, and human trafficking have now migrated to counterfeiting because of its highly lucrative rewards and the low-risk nature of the crime. Penalties for trafficking in narcotics are notoriously severe in Asia. Long prison sentences and capital punishment are common for narcotics violations.

7. Health and Safety Risks

Another type of secondary consequences suffered by developing countries is health and safety hazards caused by the proliferation of substandard counterfeit medicines. According to some recent media accounts, 10% of the world's drugs are counterfeit; fake baby infant formula, cough syrup, and other medicines have led to serious illness or death. However, almost all these harms to human health and safety occur in developing countries, which have weak border control systems that allow counterfeits that are mostly manufactured in China to pass through undetected. Almost no serious health or safety incidents have occurred in advanced industrialized countries, such as the United States and many European countries.

Conceptual Framework of the Study

Economic reforms of 1991 changed the entire scenario of Indian economy. The policy of liberalization was viewed as one of the major determinants in India's economic growth and development. India was seen as an opportunity by the foreign promoters so that they can invest their surplus funds to grow themselves a trade giant. Investments can be of two types- Foreign Direct Investment and Portfolio Investment. FDI is one of the interesting topics to be discussed upon, particularly FDI in insurance sector. No doubt, over the last decade, share of foreign promoters has consistently increased but the percentage of FDI is restricted to 49%. Now, basically the problem is that despite increase in paid-up capital of foreign partners and enhancement in the gross direct premium constantly, the insurance sector in India could not make much headway. The variations or the fluctuations in the profits of life and non-life insurance sector can be seen significantly. This requires analytical study of the impact of FDI in the Indian Insurance Sector. Thus, basically this research is carried out in order to look at the causes that restrict the FDI to grow and how, if that limit is increased, it would affect the Indian Economy- Life Insurance and General Insurance sector in terms of its paid-up capital, its premium, its profits, number of agents, number of insurers, number of offices, claims paid, etc. Before and at the time of Independence, the attitude of the Indian Government towards foreign capital was one of panic, qualm, and haunch. But for

this, the government cannot be raised fingers upon because this was quite natural and was built-in if thought about, of the previous exploitation and the role played by the foreigners in draining away the resources from this country. The suspicion and antagonism found articulation in the Industrial Policy of 1948 which, though acknowledged the part and role of private foreign investment in the country, but also emphasized and stressed that its regulation was essential in the national interest. Because of this perspective and approach expressed in the 1948 resolution, foreign capitalists got irked and as a result, the course of imports of capital goods got blocked and handicapped. as also confirmed and looked at that the foreign capital should help in the promotion of exports or substitution of imports.

Need for FDI in India

India need FDI due to following reasons such as: -

- Sustaining high level of Investment: As India is a developing country, it needs certain amount of saving to invest for its development. This gap between investment and saving is filled by foreign capital.
- Fulfilling Technological Gap: India has lower level of technology as compared to developed nations which is very necessary for industrial and other development, so it need technology transfer which comes with FDI when it assumes the form of private foreign investment.
- Exploitation of Natural Resources: India is full of natural resource, but it has no required technical skill and expertise to exploit it, so India needs foreign capital to undertake the exploitation of its mineral wealth.
- Development of Economic Structure: Domestic capital of developing countries like India is too low to build up its economic infrastructure so it needs some foreign capital to develop its economic infrastructure.

Conclision

When we consider an overall picture of the MNCS, the beneficial role is much limited in the limited stages of development they are helpful in area of needed technology and global marketing. They care only to the need of upper middle and affluent classes. It creates a new culture of colas, jams, ice-creams, and processed goods. Another threat to Indian economy is the manipulation on the capital market to suit their goals. They are increasing the shareholding in Indian companies swallowing them. They transfer attractive and profitable business to these newly started subsidiaries, so many Indian shareholders get cheated. Summing up over dependence on MNC may be harmful in terms of economic dependence and political interference. Capital flow of MNC's may be permitted but not at the cost of national interest. At present the world economy is an integrated economy i.e., a world without borders, a world in which all goods and factors can be transported across different regions at negligible cost. Some industries spread their production process across many regions searching for the ideal environment for each specific phase of production. The magnitude and dimensions of human activities are squarely rising. The concept like 'closed economy' and protectionist policies are being gradually replaced by 'market based global corporate economy'. Thus, the most significant development in international economic scenario during the past two decades has been spectacular rise in power and influence of giant global corporate. It may be said that the role of the global corporate is crucial, and their existence is indispensable. However, their functioning needs proper regulation to ensure protection of national interests and to maintain the character of national economy as a separate family of the global economy. In the present international environment, though, it seen difficult to follow a close door policy, yet it should not be an open policy as well. We must be selective for allowing the foreign investment and at the same time we must encourage the indigenous industry. 45 The finality of the present paper particularly not confined with the conclusion, but the multinational company in Indian perspective is quite different compared to the rest of the world. The Indian foreign trade is vigorous and experienced with drastic changes. India's openness policy with existence liberalism greatly contributes to our economy for growing in different dimensions. So, by observing the current statistics, we need to improve the control mechanism relating to the multinational companies by increasing productive activities in the economy. The multinational company's contribution towards employment, technological know -how, cultural transformation, optimum utilization of available resources etc., creates an opportunity to develop nations competitive advantage. Multinational companies are like double-edged sword. The sword can harm if not handled properly. Similarly, the Multinational companies have their own pros and cons. The extent of technology and management of know-how transfer by the MNCs depend to a large extent on their corporate strategy; for example, firms desiring to have a longer-term relationship with the suppliers (rather than those simply using the host country as a marketing/export base) will be more inclined to effect transfer technology. As pointed out in the World Investment Report, 2000, MNCs may restrict the access of affiliates to technology to minimize inter-affiliate competition. It is noted that MNCs are more likely to license older technologies from which they have already derived significant rents than newer technologies on which there are still relying for market leadership. Further, they may hold back the upgrading of the affiliate technology or invest insufficiently in host-country training and R&D in accordance with their global corporate strategies. Therefore, arguing that FDI inflows and economic liberalization automatically facilitates technology transfer is being extremely naïve. Studies over a period of years indicate that the impact of MNCs on host States is neither as positive nor as negative. It is true that MNCs play an important role in the developing countries. They can create more employment opportunities for huge labour force, train them and promote the development of high-level skills. Moreover, MNCs help increase GDP growth and capital formation, reduce poverty. However, MNCs can be guilty of pollution or human rights abuse. Critics of MNCs alleged that MNCs want to reduce their production costs, seek 46 out developing countries with flexible environmental regulations and undertake in those

countries productive activities that exacerbate both local and global environmental problems. Instead of adhering to either, a positive or negative overview this perspective recognizes that the costs and benefits of FDI by MNCs will vary from country to country and that what constitutes costs and benefits will vary depending on the values of the observer.

References

1. Rosman Md. Yusaff and others (2012): 'A Critical Review of Multinational Companies, Their Structures and Strategies and Their Link with International Human Resource Management',IOSR Journal of Business and Management (IOSRJBM) ISSN: 2278-487X • Volume 3, Issue 5 (Sep,-Oct. 2012), PP 28-37 www.iosrjournals.org
2. Mithani D. M. (2002): International Economics, Himalaya Publishing House, Mumbai, p.405.
3. Aswathappa K., (2006): 'Essentials of Business Environment', Himalaya Publishing House, Mumbai, p. 40.
4. Gangrade K. D., (2005): 'Gandhian Approach to Development and Social Work', Concept Publishing Company, New Delhi, p. 44. • http://unctad.org/en/Docs/wir2009 overview_en.pdf. http://www.ips.org.pk/globalization/1007-mncs-and their-role-andsocioeconomic -impact -on-host-societies.html • UNCTAD report 2007
5. S.A. Hamed Hosseini (2010): 'Globalization and Capitalism', Available on http://globalalternatives.wordpress.com/2010/04/01/globalization-andnation-state
6. Murthy S. (1999): 'Foreign Investment and Economic Growth through Multinational Corporation and their Multiple Impact' in Arya P. P. and Tandon B. B. 'Multinational Versus Swadeshi Today' (ed), Deep and Deep Publication Pvt. Ltd., New Delhi, p. 113.
7. Government of India, Ministry of Corporate Affairs, 57th Annual Report on the Working & Administration of the Companies Act, 1956, New Delhi, p.32, available onhttp://www.mca.gov.in/Ministry/pdf/57AR_English.pdf

Parichay Maharaja Surajmal Institute Journal of Applied Research

Cyber Security and Responsible Online Behavior

Tarunim Sharma[1], **Kanika**[2], **Himanshu**[3]

Abstract

In today's digital era, understanding the intricacies of Cybersecurity and fostering responsible online behavior are paramount for a secure and resilient digital future. This research paper explores the dynamic landscape of cyber threats, including data breaches and malicious actions that pose significant risks to digital integrity. Additionally, it sheds light on the ethical considerations and social responsibilities tied to digital interactions, emphasizing the importance of cultivating a culture of responsible online conduct. The study seeks to underscore the interdependence of robust Cybersecurity measures and individual accountability, integrating theoretical frameworks, real-world case studies, and behavioral assessments. The paper advocates for building cyber resilience through collective commitment to ethical technology use, placing a strong emphasis on educational activities and awareness campaigns.

Keywords: Cyber Security, Cyber Threat, Privacy, Data Protection

Introduction

In today's digitally interconnected world, understanding the intricacies of cybersecurity and ethical online behavior is more critical than ever. The digital environment is constantly under siege from a myriad of cyber threats, ranging from data breaches to malicious actions that pose serious risks to the integrity of our globalized society. Simultaneously, the ethical dimensions inherent in online activities demand a shared commitment to cultivating a culture of accountability in our digital interactions.

This research seeks to conduct a comprehensive investigation into the intertwined realms of Cybersecurity and ethical online behavior. Recognizing the interdependence between robust Cybersecurity measures and individual accountability becomes increasingly crucial as we navigate the complex terrain of cyber threats. The study aims to elucidate the moral considerations and social responsibilities associated with our online presence, advocating for awareness-raising and educational initiatives that promote cyber resilience and responsible digital behavior.

Cyber Threats: A Comprehensive Overview

Understanding and managing diverse cyber risks is essential to protect individuals and organizations. This section provides a comprehensive overview of four significant cyber threats: Malware and Ransomware, Phishing Attacks, Identity Theft, and Social Engineering. It delves into the nature of each threat, their implications, and the importance of vigilance, education, and technological protections in countering them.

1. **Malware and Ransomware:**

   The term "malware" and "ransomware" are used interchangeably. Malware is a collection of malicious software designed to cause harm or gain access to systems. It can be a virus, worm, Trojan horse, spyware, or other type of malicious software. Once it's in place, it can compromise data, interfere with operations, or act as a springboard for more attacks. Ransomware, on the other hand, is a type of malicious software that encrypts your files and asks you to pay (usually in crypto) for them to be released. This malicious software can cause financial losses as well as serious operational problems for businesses and people.

2. **Phishing Attacks:**

   Phishing attacks involve the deception of sensitive information collection by appearing as trustworthy institutions. Phishing techniques, which are typically distributed via emails, texts, or bogus websites, deceive users into disclosing personal information such as login credentials or financial information. Vigilance and education are critical deterrents to falling prey to these deceptive methods.

3. **Identity Theft:**

   Identity theft occurs when an attacker obtains unauthorized access to an individual's personal

[1] *Assistant Professor, Department of Computer Applications, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

[2-3] *Student Department of Computer Application, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

information, such as social security numbers or financial information, in order to commit fraudulent acts. Cyber criminals may use a variety of vectors, such as data breaches or phishing attempts, stressing the importance of strong identity protection and constant monitoring.

4. **Social Engineering:**

   Social engineering is the skill of persuading others to reveal sensitive information or perform acts that may jeopardize security. Pretexting, baiting, and quid pro quo scenarios are all examples of tactics. Social engineering takes use of trust and human error, emphasizing the significance of Cyber security knowledge and training.

As the digital realm evolves, so do the complexities of cyber threats. Combating these threats necessitates a diverse approach that includes technology protections, user education, and strong Cyber security policies. Individuals and organizations can dramatically improve their resistance to these pervasive cyber dangers by remaining educated and taking proactive measures.

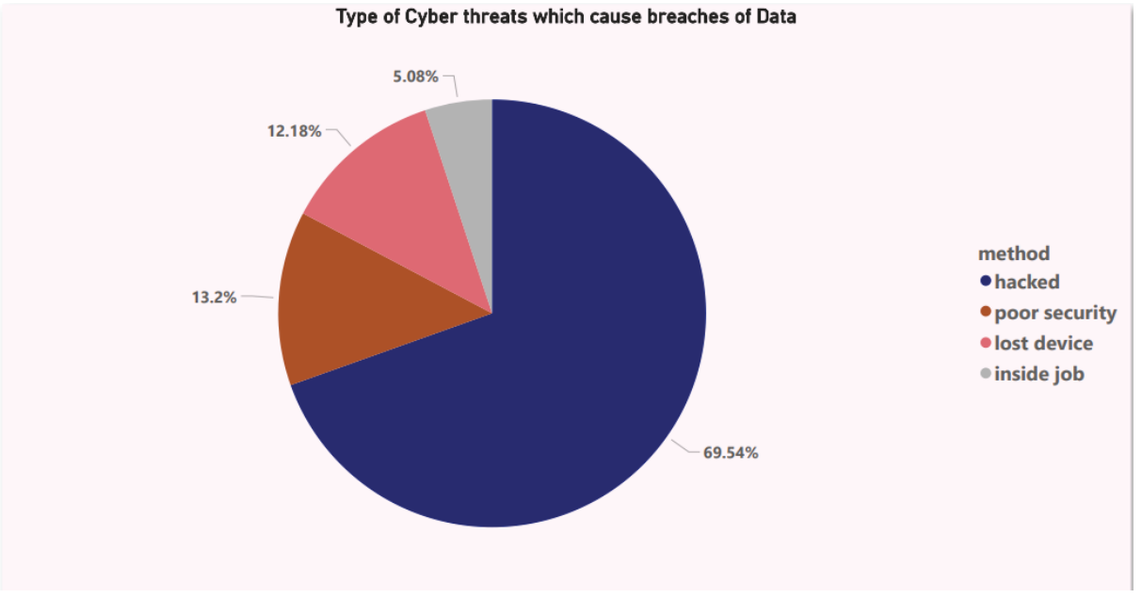
Data Breaches: A Comprehensive Overview from Kaggle Dataset

To enhance the empirical foundation of our research, we leveraged a comprehensive dataset obtained from Kaggle, specifically focusing on data breaches. The dataset provides valuable insights into the nature of data breaches, including various attributes such as breach methods, impact, severity level and affected industries, etc.

Types of Cyber Threat

We conducted a meticulous analysis, with a particular emphasis on the "method" which delineates the diverse approaches employed by cyber adversaries to perpetrate data breaches. Our goal is to offer a nuanced understanding of the prevalent methods, thereby contributing to a more informed discussion on effective cybersecurity strategies.

Fig -1 : Pie Chart representing reasons of Data Breaches



To visually represent the distribution of data breach methods, we utilized the "method" column to construct a pie chart. This graphical representation provides a clear and concise overview of the proportionate contribution of each method to the overall data breaches observed in the dataset.

Findings: The pie chart constructed from the "method" column of the Kaggle dataset unveils a comprehensive breakdown of data breach methods. The analysis indicates a diverse array of tactics employed by malicious actors, with distinct percentages associated with each method. The key findings are summarized as follows:

- **Hacking: 69.54%**

  Hacking emerges as the predominant method, constituting a substantial 69.54% of the observed data breaches. This category encompasses various techniques employed by cyber adversaries to exploit vulnerabilities, infiltrate systems, and gain unauthorized access.

- **Inside Job: 5.08%**

  Data breaches attributable to insider threats, classified as "Inside Job," account for 5.08% of the dataset. These incidents involve individuals within an organization intentionally or unintentionally compromising sensitive information.

- **Lost Device: 12.18%**

  Approximately 12.18% of data breaches are attributed to the loss of devices containing sensitive information. This method underscores the importance of securing devices to prevent unauthorized access to data in case of physical loss.

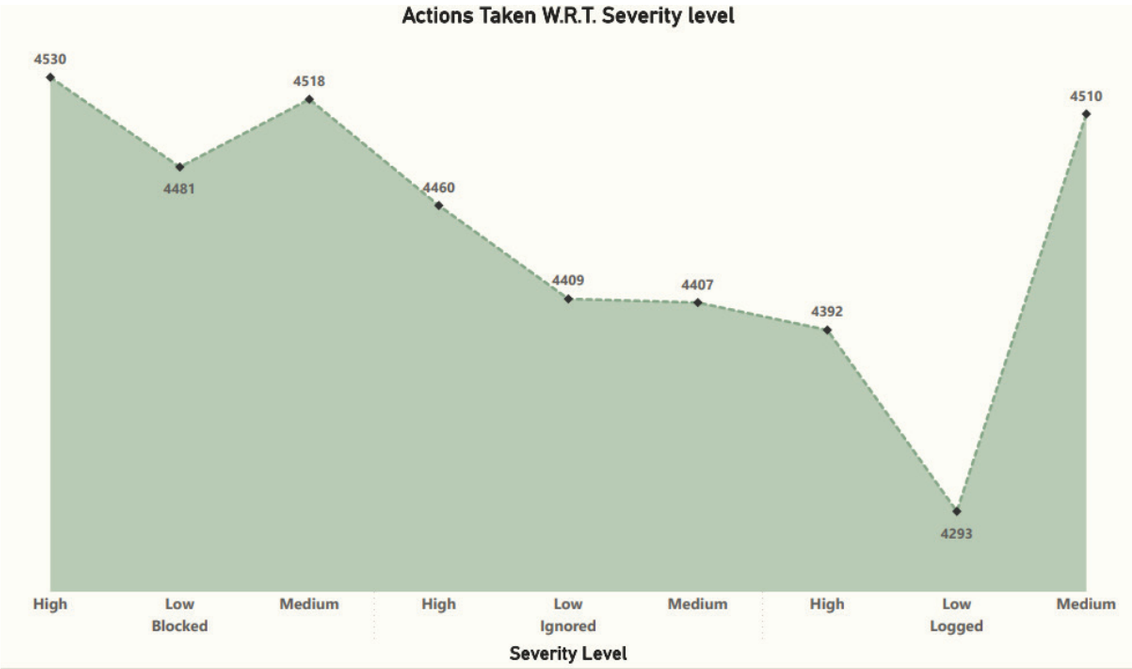
- **Poor Security: 13.2%**

  Data breaches resulting from poor security practices represent 13.2% of the dataset. This category encompasses incidents where inadequate security measures, such as weak passwords or unpatched systems, contribute to unauthorized access and data compromise.

Actions according to Severity level of data

Our analysis involved a meticulous examination of the "action taken" on data breach based on "severity level" of data.

Fig -2 : Area Chart representing Action taken w.r.t Severity level



To visually depict the distribution of actions taken and severity levels in the data, we opted for an area chart. This chart type allows for a clear representation of trends over time or categories, providing a comprehensive overview of the data.

Key Findings

- **Blocked Actions:**

  The area chart highlights the instances where the "blocked" action was taken in response to high, medium, and low-severity breaches. This insight is crucial for understanding the proactive measures implemented to mitigate the impact of potential threats.

- **Ignored Actions:**

  Instances of "ignored" actions are depicted, showcasing situations where a decision was made to overlook or not actively respond to certain breaches. The chart offers insights into the distribution of such decisions across severity levels.

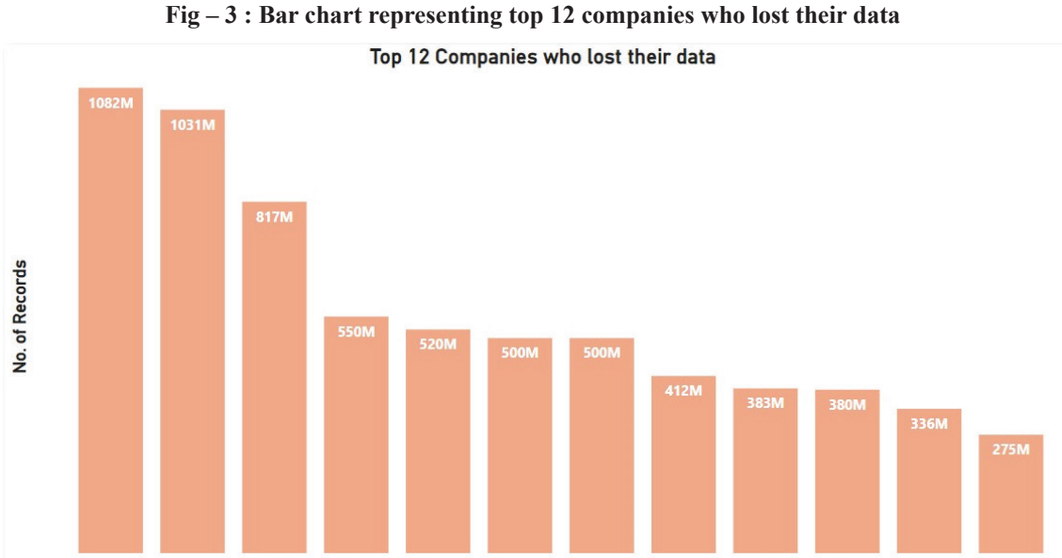
- **Logged Actions:**

  The area chart represents the frequency of "logged" actions, indicating incidents where details of the breach were recorded for analysis or future reference. This type of action is essential for understanding incidents that might not have immediate consequences but warrant documentation.

Analysis of Companies who lost their data

To gain insights into the organizational impact, we utilized the "organization" data to study the frequency of data breaches across different entities. We employed data visualization techniques to present a clear and concise overview of the distribution of data breaches among various organizations.

Fig – 3 : Bar chart representing top 12 companies who lost their data



A bar chart was constructed using the "organization" column to visually represent the frequency of data breaches across different entities. Each bar on the chart corresponds to a specific organization, with the height of the bar indicating the number of reported data breaches affecting that organization. This visual representation allows for a quick assessment of which organizations are more susceptible to data breaches.

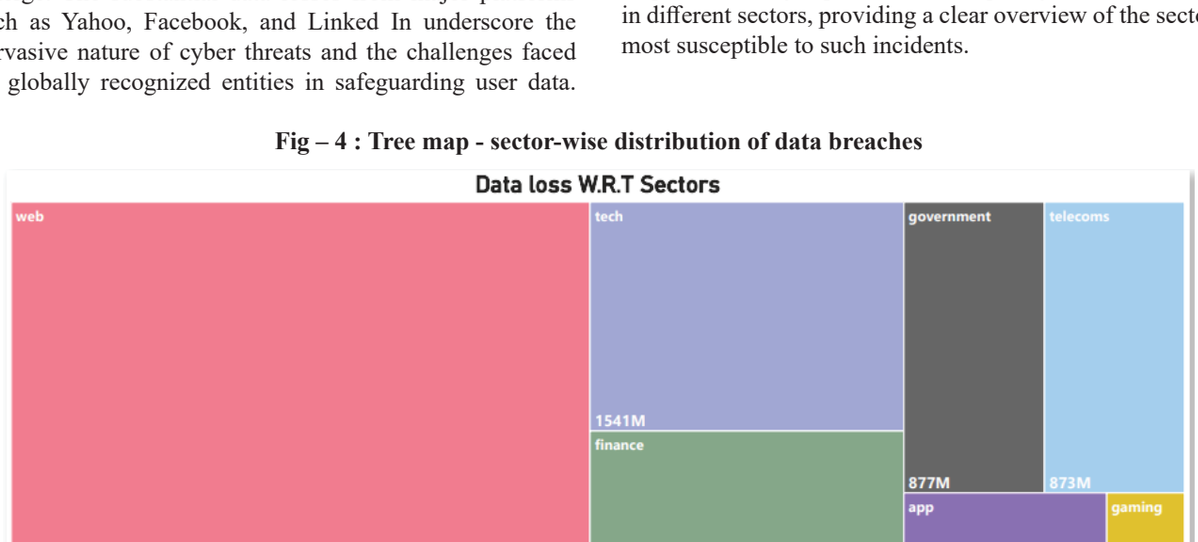
Key Observations

Upon analysis of the bar chart, several key observations emerge. The substantial data losses from major platforms such as Yahoo, Facebook, and Linked In underscore the pervasive nature of cyber threats and the challenges faced by globally recognized entities in safeguarding user data. Furthermore, the inclusion of Aadhar, Spambot, and Shanghai Police in the dataset highlights the diverse range of organizations susceptible to data breaches, emphasizing the need for a comprehensive and inclusive approach to Cybersecurity.

Sector-wise Data Breach Analysis

To analyze the sector-wise distribution of data breaches, the distribution of data breaches across various sectors was taken into consideration. The objective is to create a tree map that visually represents the frequency of data breaches in different sectors, providing a clear overview of the sectors most susceptible to such incidents.

Fig – 4 : Tree map - sector-wise distribution of data breaches

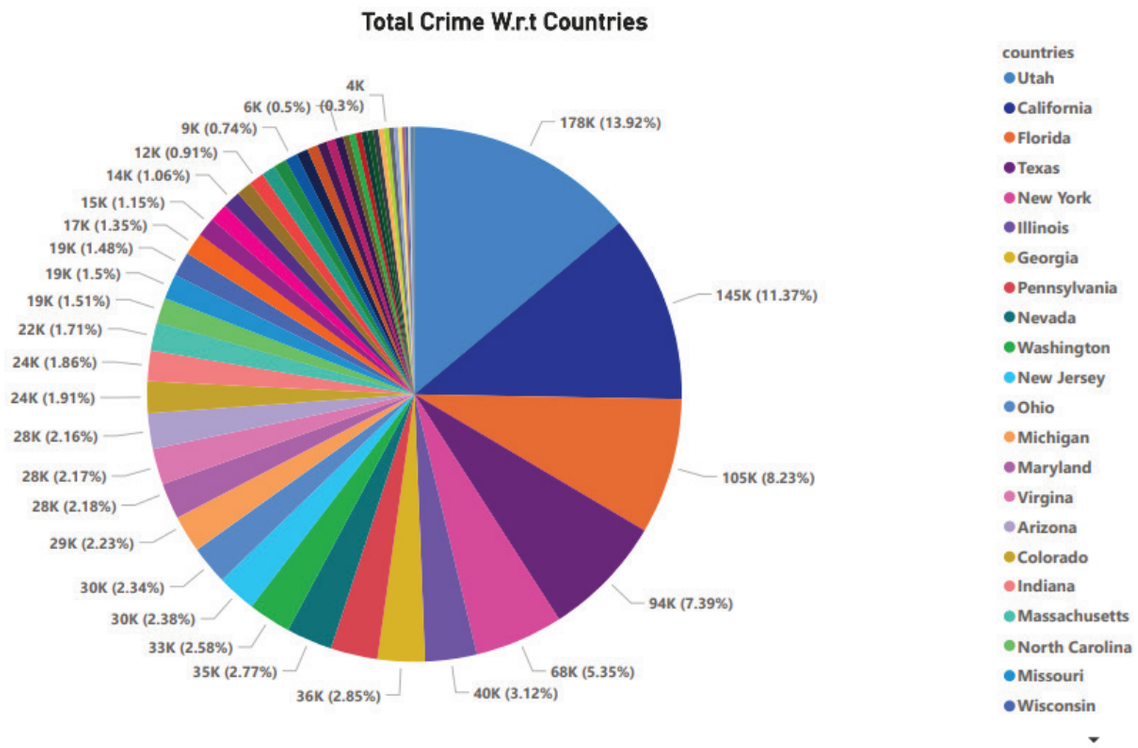


The tree map vividly illustrates the distribution of financial losses resulting from data breaches across different sectors. Sectors with larger blocks indicate higher monetary impacts, emphasizing the sectors that may have experienced more severe financial consequences due to Cybersecurity incidents.

Cyber Crime rate w.r.t Countries

The analysis involves creating a pie chart based on the "total crime", which represents the cumulative number of reported data breaches in each country. The pie chart serves as a visual representation of the distribution of data breaches, highlighting the proportion of incidents attributed to each country.

Fig – 5 : Total Crime rate w.r.t Countries



The pie chart analysis reveals insights into the distribution of data breaches across different countries. It allows us to identify countries with a higher incidence of data breaches and those that may be comparatively more resilient. The findings contribute to our understanding of the geographical patterns of cyber threats, offering valuable information for policymakers, organizations, and individuals seeking to enhance Cybersecurity measures.

Data Protection and Privacy

Safeguarding Information in the Digital Age: Safeguarding sensitive information in the digital age is a top priority. This section focuses on encryption technologies, data breaches and incidents, and privacy regulations and compliance. It explores the role of encryption in securing data, the nature and implications of data breaches, and the global regulatory environment governing data protection and privacy.

1. **Encryption Technologies:**
   - Overview: Encryption is a foundational technology that uses complicated algorithms to change data into a secure, unreadable state. It functions as a strong protection mechanism, rendering intercepted data indecipherable to unauthorized parties.
   - Encryption Types: The two most common types are symmetric and asymmetric encryption. Asymmetric encryption involves a pair of public and private keys, whereas symmetric encryption use a single key for both encryption and decryption. Transport Layer Security (TLS) and Pretty Good Privacy (PGP) are two popular encryption methods.

2. **Data Breaches and Incidents:**

   - Nature of Data Breaches: Data breaches occur when sensitive information is accessed, acquired, or disclosed without authorization. Cyber criminals use vulnerabilities in databases to obtain access, jeopardizing the confidentiality and integrity of stored data.
   - Implications: The consequences of data breaches are numerous, ranging from financial losses and reputational harm to legal ramifications. Breached data frequently contains personally identifiable information (PII), financial information, or corporate secrets.

3. **Privacy Regulations and Compliance:**

   - Global Regulatory Environment: Individual rights are protected by privacy legislation, which govern the acquisition, processing, and storage of personal data. Notable regulations include the European Union's General Data Protection Regulation (GDPR), the United States' Health Insurance Portability and Accountability Act (HIPAA), and Canada's Personal Information Protection and Electronic Documents Act (PIPEDA).
   - Compliance Difficulties: Organizations must install strong data protection measures, undertake regular risk assessments, and develop transparent data-handling policies in order to comply with privacy rules. Noncompliance can result in serious consequences.

As technology advances, so do the challenges connected with data security and privacy. A comprehensive strategy includes using encryption technologies, building effective incident response strategies for data breaches, and adhering to privacy standards. Organizations may build a secure digital environment that respects individual privacy and instills trust in data handling methods by prioritizing these characteristics.

Individual and Organizational Cyber Hygiene

Prioritizing Security Practices: Developing strong individual and organizational cyber hygiene is critical in minimizing risks and building defenses against evolving threats. This section emphasizes password management, software updates and patching, and secure communication practices as crucial components of cyber hygiene.

1. **Password Management:**

   - Importance: Passwords are the first line of security against unwanted access. Effective password management entails setting strong, unique passwords for each account and updating them on a regular basis.
   - Recommended Practices: Password hygiene requires the use of multi-factor authentication (MFA), the use of password managers, and the avoidance of easily guessable passwords. Passwords should be changed on a regular basis, and they should not be shared.

2. **Software Updates and Patching:**

   - Importance of Updates: Software updates and patches fix vulnerabilities and flaws in applications and operating systems. Failure to update can expose systems to cyber attackers' exploitation.
   - Patch Management Practices: Organizations should build effective patch management methods to apply updates as soon as possible. Automated technologies can help to speed up this process by assuring timely patch deployment and reducing the window of vulnerability.

3. . **Secure Communication Practices:**

   - Encryption in Communication: Secure communication practices entail encrypting data during transmission to protect it from interception. This is particularly important in online transactions, email communication, and data exchange over networks.
   - Virtual Private Networks (VPNs): Using VPNs can improve secure communication by establishing encrypted tunnels over public networks, protecting data from eavesdropping. This is especially important in distant work circumstances.

Cybersecurity Education and Awareness:

Empowering Through Knowledge: Education and knowledge about cybersecurity play a pivotal role in creating a resilient and security-conscious digital community. This section explores individual and organizational training programs, promoting digital literacy, and awareness campaigns for responsible online behavior. It highlights the importance of continuous learning, interactive training modules, digital literacy initiatives, and appealing awareness campaigns to empower individuals and organizations with the knowledge required to navigate the growing cyber landscape safely.

1. **Individual and Organizational Training Programs:**

   - Continuous Learning: As cyber risks evolve, individuals and businesses must continue to educate themselves. Training programs include a wide range of topics, from detecting phishing attempts to comprehending the most recent Cyber security developments.
   - Interactive Training Modules and Simulated Cyber Attack Scenarios: Interactive training modules and simulated cyber attack scenarios allow individuals to apply theoretical knowledge in a practical situation, improving their capacity to respond effectively to real-world threats.

2. **Promoting Digital Literacy:**
    - Understanding Digital dangers: Digital literacy projects aim to improve people's understanding of digital dangers and safe online practices. This involves determining trustworthy sources, identifying potential hazards, and comprehending the consequences of revealing personal information online.
    - Educational Initiatives: Including digital literacy in educational curricula and promoting easily accessible online resources help to create a more aware and watchful digital population.
3. **Responsible Online Behavior Awareness Campaigns:**
    - Promoting Responsible activity: Awareness programs try to encourage responsible online activity by emphasizing the potential implications of cyber risks. This includes supporting ethical behavior in digital places, respecting the privacy of others, and comprehending the consequences of one's online actions.
    - Appealing Campaigns: To reach a diverse audience, creative and engaging awareness campaigns use a variety of platforms such as social media, posters, and webinars. These initiatives aim to make cyber security education more relatable and approachable.

A proactive approach to Cyber security is fostered by emphasizing individual and corporate cyber hygiene habits and investing in Cyber security education and awareness programs. These approaches collectively contribute to the development of a resilient digital ecosystem in which individuals are equipped with the knowledge and habits required to safely navigate the growing cyber landscape.

Conclusion

In conclusion, this research paper advocates for a holistic approach to Cybersecurity and responsible online behavior. By understanding the complex dynamics of cyber threats, implementing robust Cybersecurity measures, and fostering a culture of accountability and ethical conduct, individuals and organizations can contribute to building a secure digital ecosystem. The interplay between technical defenses, user awareness, and education is crucial for developing a resilient digital future where the benefits of technology can be harnessed without compromising security and integrity.

References

1. https://joncosson.com/cyber-security-basics-for-beginners
2. https://digitalsecurityworld.com/bp-digital-security/
3. https://www.knowledgehut.com/blog/security/ethical-hacking-vs-cyber-security
4. https://www.kaggle.com/datasets/joebeachcapital/worlds-biggest-data-breaches-and-hacks
5. https://www.kaggle.com/datasets/husseinsalaudeen/us-internet-crime-2020-202

Parichay Maharaja Surajmal Institute Journal of Applied Research

Development of Green Energy Market in India

Dr. Aanchal Tehlan

Abstract :

India is about develop itself as one of the largest manufacturer in solar energy sector and is facing the fastest emerging leader in renewable energy. India has done many good achievements in this sector, including green hydrogen, which in turn gives a robust ecosystem. The country is the largest producers of wind energy and is having very high growth in solar energy sector, which is making India to be the global leader in the renewable energy sector. This research paper is going to describe and explain about the green energy market in India.

1.1 Introduction:

There are certain distinctions between renewable and green energy, which we shall discuss later, it frequently derives from these sources. The crucial aspect of these energy sources is that they do not damage the environment in ways like the atmospheric release of greenhouse gases. By 2028, the government hopes to have 500 GW of renewable energy installed. In comparison to the first eight months of FY21, the increase of renewable energy capacity was 8.2 GW in the first eight months of FY22. ICRA anticipates a 12.5 GW increase in renewable energy capacity in FY22 and a 16 GW increase in FY23. When compared to 2.63 GW in March 2014, the installed capacity of solar energy has expanded more than 18 times, reaching 49.3 GW by the end of 2021. India increased its solar power capacity by 7.4 GW in FY22 to December 2021, a 335 percent increase from 1.73 GW in FY21. With sales of 329,000 off-grid solar devices in the first half of 2021, off-grid solar electricity is expanding quickly in India. Northern India is anticipated to emerge as India's renewable energy powerhouse,with a potential capacity of 363 GW and laws that are geared toward the industry.

2 Objectives of the Study

- To forecast the upcoming trend and expansion of energy sector with the help of data, government policies and trends.
- To suggest policies and possibilities for India to achieve its target of contribution to install 500 GW of renewable energy capacity by 2028.

Research Methodology

The project is primarily based on the review of the industry from past data and forecasting the growth for the upcoming years with the help of current data and government policies. Both quantitative and qualitative data is used in the presented minor project report with detailed analysis, visualisation and forecasting of secondary data available in research papers, articles, and on the internet. Ministry of renewable energy presents with authentic and clear data, reports and policy formation of the industry in real-time. Collecting information and opinion on policies from professionals, professors and institutions.

Need and Scope of the Study

India can take advantage of solar energy's enormous potential because it has Sun for almost all year. Additionally, it offers enormous potential for the hydropower industry, which is being researched in many regions, particularly in the northeast. Prime Minister Mr. Narendra Modi pledged to raise India's renewable energy generating capacity to 500 GW and fulfill most of India's energy demands through renewable sources by the year 2030 during the COP-26 Summit in Glasgow in November 2021. To assess this target, we need to analyse the trends, policies and data relevant to it.

- The focus of the study is primarily on the past quantitative data and for future mostly qualitative data like policies formations and news.
- The data is limited to authentic government sources i.e. the Ministry of Renewable Energy, Niti Aayog, Ministry of Power etc.
- Over the past five years, India has implemented innovative strategies to accelerate its transition to clean energy and mobility 2028. Similarly, the Faster Adoption and Manufacturing of Electric Vehicles (FAME) II plan, according to NITI Aayog and Rocky Mountain Institute,

[1] *Assistant Professor, Department of Computer Applications, Maharaja Surajmal Institute (affiliated to GGSIP University, Delhi), C-4, Janakpuri, New Delhi-58.*

promotes the adoption of 7,000 electric buses, 5 lakhs electric three-wheelers, 55,000 electric passenger vehicles, and 10 lakhs electric two-wheelers

The Growth of green energy so far

Since 2014, the renewable energy sector in India has seen investments totalling more than Rs. 5.2 lakh crore (US$ 70 billion). In terms of its investments and intentions for renewable energy in 2020, India was placed third internationally, according to the analytics companyBritish Business Energy.

Forthcoming view for the Industry

The government is actively supporting green energy and has already started a number of sizable sustainable power projects. By 2023, India will have 5,000 compressed biogas plants in operation. As the government concentrates on electric vehicles, green hydrogen, and the production of solar equipment, India's renewable energy sector is anticipated to grow in 2022 with a probable investment of US$ 15 billion this year. As more effective batteries are used to store power, the cost of solar energy is predicted to drop by 66 percent by 2040 compared to the current cost, making it possible for about 49 percent of all electricity to be produced by renewable sources. By using renewable energy sources. By 2029–2030, the Central Electricity Authority (CEA) predicts that the percentage of renewable energy generation would rise from 18 to 44 percent. Every state in India will have a "green city" that runs on renewable energy, according to the Indian government. The "green city" will make use of waste-to-energy facilities, solar parks on the city's outskirts, rooftop solar systems on every home, and public transportation that supports electric mobility.

People, Development, and Financial perspective.

This paper explores the history and future of India's renewable energy ecosystem from a people angle. According to Shri Nitin Gadkari, Minister for Road Transport & Highways, India will achieve the goal of producing 450 GW of reusable energy by 2030.The ongoing policy support from the government and multi-stakeholder cooperation. What does it mean for the working young of our People? This push for renewable energy will lead to job possibilities in both urban and rural locations. By 2030, the electricity sector has the potential to treble employment if aggressive decarbonization strategies are followed. The solar and wind energy industries will contribute the most jobs to this. A certain way to take advantage of India's demographic dividend is to go green. The overreliance on biofuels and oil products, however, prevents the mapping of primary energy use from genuinely pointing to such a change . This amply illustrates how rural India still relies on fossil fuels for the majority of its energy needs. This shows that India still has a long way to go until its whole energy sector is transformed.

Developing Angle

India is getting into clean transportation and is getting ready to introduce ropeways, cable cars, and funicular rail. The country now struggles with an unbalanced modal share, with only 17 percent of freight transport relying on rail and 71 percent on roads. As a result, there is a great chance to seize an improved, more affordable, and clean transportation system. India has the chance to change its heavy reliance on privately owned, conventional automobiles and pave the path for an electric, connected future of passenger mobility. Energy storage technology is crucial to the whole shift to renewable energy. India's energy storage industry is anticipated to reach 1 lakh crore across sectors by 2030, according to NITI Aayog and RMI. A few sizable gigawatt-scale, competitive export integrated battery and cell manufacturing factories are being put up in India as part of the National Mission on Transformative Mobility and Battery Storage, which was unveiled in March 2019. The Logistics Efficiency Enhancement Program, which the government has started, will improve infrastructure and information technology in order to have better infrastructure for renewable energy. The Indian government wants to create "Green cities" in each state in the nation, which will employ electric public transportation and solar rooftop systems to generate all of their own green energy. In summary, there is a lot more progress to come as India continues to modernise its infrastructure and include the necessary technologies to create a more sustainable ecology. The aforementioned statistic makes it evident that the nation's capacity for producing renewable energy has reached a new high, with around 18% of the overall capacity making up about 57,245 MW. A detailed breakdown of this installed capacity reveals that more than 50% of it is made up of wind energy, 20% of it is made up of solar energy, and the other 20% is made up of small hydro, biomass, and waste-to-energy sources. The most recent trend, however, indicates that solar energy is taking up more and more room in the renewable energy basket.

Finance Angle

There are additional benefits of using green energy. It also has a solid financial foundation.By 2040, renewable energy is anticipated to produce 49% of all electricity, according to IBEF. The yearly savings from switching to renewable energy over coal will be INR 54,000 crore. The International Renewable Energy Agency estimates that switching from costly coal power to renewable energy will save operators USD 32 billion annually and reduce carbon dioxide emissions by almost three billion tonnes (IRENA).There are benefits for everyone, thus the right legislative changes and financial incentives will pave the road for gradual adoption of renewable energy. While the initial technology and infrastructure setup may be costly, as economies of scale spread and usage increases, there will be more efficiency and lower costs across the chain. Recently, a range of investors have entered the renewable energy sector in India, despite the fact that bank financing

still dominates the country's renewable energy financing structure. They include development banks, private equity firms, institutional investors,and commercial banks. The presence of different investor categories in the market for renewable energy is shown in the table below (Table 1). The data shows that venture capital investors are the most recent investors in the market, supporting the equity component of the project-based financing model. The lack of international banks, however, stands out in contrast to their presence. According to a thorough analysis of bank and non-bank funding of renewable energy projects, many banks have invested around $2,570 million (Please refer to Table 2). About 20% of this has been committed, according to IDFC. The table also amply illustrates the fact that non-banking financial firms have made the majority of the pledges.

The Big Picture

This unprecedented transition to cleaner, more environmentally friendly energy is proceeding quickly. According to the Ministry of New and Renewable Energy (MNRE), India's green energy sector attracted foreign direct investment (FDI) of USD 7.27 billion from 2014–15 to June 2021, of which USD 797.21 million arrived during 2020–21 alone. India just declared at COP26 in Glasgow that it would eliminate all net carbon emissions by 2070. More than ever, there is a chance for the public and private sectors to work together to provide the necessary infrastructure and engage in technical power plays. The likelihood of employment is strong, and as the scale rises, financial repercussions are favourable. It is doubtful that we will see catastrophic overhauls like we did in 2020, despite the fact that COVID-19's incoming waves, particularly the most recent surge of Omicron, occasionally reinstate some level of uncertainty. Economic impetus will reappear when this wave peaks and then tapers off in the upcoming months. Green energy will keep pursuing its goal against a larger backdrop, and we should too. In order to partner in this green energy initiative, we must choose the appropriate initiatives and fields.

Applications of Green Energy

Future sustainable energy scenarios are anticipated to heavily rely on green energy technology. Energy demand will probably be the main determinant of the precise function of green technology and energy. Therefore, it will be feasible to generate green energy from renewable energy sources such as hydraulic, solar, wind, geothermal, wave, biomass, etc. in order to offset the energy need. Green energy and technology may be applied in a variety of application domains. Thus, it can be claimed that readily available green technology and energy sources can be beneficial.

a. promote environmental protection and sustainability, boost energy security,

b. encourage the creation of fresh, eco-friendly technology,

c. lessen soil, water, and air pollution, forest loss, sicknesses, and fatalities connected to energy use,

d. lessen or end disputes between nations over energy supplies, etc.

Green energy and related technologies are thus required to preserve global stability by minimising the negative impacts of the usage of fossil-based energy. As a result, the significance of green energy in addressing global issues and establishing a sustainable energy system should be emphasised. A transition to a green energy economy should also be encouraged, and developed nations in particular should increase their investments in green energy and technologies.

Status of Renewable Energy Sources

There are regional differences in the growth of the renewable energy sector. According to statistics on renewable share, the South zone dominates the leaderboard by a margin of 22.5 percent, followed by the Islands (12.9%), Western (12%), North (9%), Northeast (8.7%), and Eastern (1.4 percent). When compared to other renewable technologies, wind technology has more grid connections and is more widely accepted in India. End of March 2015 saw a total installation of grid-interactive renewable energy of 35.77GW, with little under 1.1GW coming from off-grid 3 and captive power capacity. Grid-connected wind makes up 23.44 GW of the total, with the next largest contributions coming from small hydro (4 GW), solar (3.7 GW), bagasse 4 cogeneration (3 GW), biomass (1.4 GW), and waste to energy (115MW). There are now roughly 4.8 million family biogas plants running under the heading of alternative renewable energy systems. Families in remote areas that might not have access to liquefied petroleum gas, electricity, or piped natural gas can cook their food using domestic biogas systems. To address the needs of household or business customers for hot water, about 8.9 million square metres (5 acres) of solar water heating collection areas have been erected.

In 2013–14, India exported other photocells worth $4.21 million and solar/photovoltaic cells for $282.58 million. According to the Directorate General of Foreign Trade (India), India bought solar/photovoltaic cells for $711.12 million and other photocells worth $39.72

million over the same time, resulting in a cumulative trade imbalance of $464 million. On the other side, in 2013–14, windmills, wind turbines, and engines produced a trade surplus of $3.58 million.A brief explanation of wind, solar, small hydro, and waste to energy is described in the following sections.

Conclusion:

Achieving net zero is not reducing the dangerous greenhouse gas emissions. India's energy emissions must benefit its citizens, and good policies can reduce the trade-offs between affordability, security and sustainability. Green hydrogen will be playing a major role to achieving the net zero and decarbonising the difficult sectors. India wants to become a global hub for the production of green hydrogen and its exports. India can definitly create 5 million ton of hydrogen

just by replacing grey hydrogen in the fertiliser sector. This 5 million tonnes will give the abatement of 28 million tonnes of CO_2. This proportion will be growing as we increase green hydrogen economy and will result in production of more than 400 million tons of CO_2 by 2050.

India is one of the biggest developing economy having more than 1.3 billion people. NITI Aayog and IEA will be working together to help India to grow and give a better quality of life to the citizens.

References:

1. Gielen, D.; Boshell, F.; Saygin, D.; Bazilian, M.D.; Wagner, N.; Gorini, R. The role of renewable energy in the global energy transformation. *Energy Strategy Rev.* **2019**, *24*, 38–50. [**Google Scholar**] [**CrossRef**]
2. Salvarli, M.S.; Salvarli, H. For sustainable development: Future trends in renewable energy and enabling technologies. In *Renewable Energy-Resources, Challenges and Application*; Al Qubeissi, M., El-kharouf, A., Soyhan, H.S., Eds.; IntechOpen: London, UK, 2020; Available online: **https://www.intechopen.com/chapters/71531** (accessed on 30 August 2022). [**CrossRef**]
3. Kaygusuz, K. Energy for sustainable development: A case of developing countries. *Renew. Sustain. Energy Rev.* **2012**, *16*, 1116–1126. [**Google Scholar**] [**CrossRef**]
4. Papadis, E.; Tsatsaronis, G. Challenges in the decarbonization of the energy sector. *Energy* **2020**, *205*, 118025. [**Google Scholar**] [**CrossRef**]
5. Dincer, I. Environmental impacts of energy. *Energy Policy* **1999**, *27*, 845–854. [**Google Scholar**] [**CrossRef**]
6. Midilli, A.; Dincer, I.; Ay, M. Green energy strategies for sustainable development. *Energy Policy* **2006**, *34*, 3623–3633. [**Google Scholar**] [**CrossRef**]
7. Edenhofer, O.; Pichs-Madruga, R.; Sokona, Y.; Seyboth, K.; Kadner, S.; Zwickel, T.; Eickemeier, P.; Hansen, G.; Schlomer, S.; von Stechow, C.; et al. (Eds.) *Renewable Energy Sources and Climate Change Mitigation: Special Report of the Intergovernmental Panel on Climate Change*; Cambridge University Press: Cambridge, UK, 2011. [**Google Scholar**] [**CrossRef**][**Green Version**]
8. Lima, M.A.; Mendes, L.F.R.; Mothé, G.A.; Linhares, F.G.; de Castro, M.P.P.; Da Silva, M.G.; Sthel, M.S. Renewable energy in reducing greenhouse gas emissions: Reaching the goals of the Paris agreement in Brazil. *Environ. Dev.* **2020**, *33*, 100504. [**Google Scholar**] [**CrossRef**]
9. Huesemann, M.H. The limits of technological solutions to sustainable development. *Clean. Technol. Environ. Policy* **2003**, *5*, 21–34. [**Google Scholar**] [**CrossRef**]
10. Ji, Q.; Zhang, D. How much does financial development contribute to renewable energy growth and upgrading of energy structure in China? *Energy Policy* **2019**, *128*, 114–124. [**Google Scholar**] [**CrossRef**]

MAHARAJA SURAJMAL INSTITUTE

MISSION

MSI encourages students to achieve academic excellence through continuous evaluation in professional education by enhancing skills relating to critical thinking, decision making, entrepreneurship, scientific temper, market dynamics and research.

Published by:
Maharaja Surajmal Institute
(an affiliate of GGSIP University)
C-4, Janakpuri, New Delhi-110058

Annual Subscription Fees:
Rs. 1000/-