Artificial Intelligence Enablement for Flexible Working in New Generation Industries

Hemavathi G.P.
Assistant Professor
Vivekananda Institute of Management

Dr. P. Bhanumathi
Associate Professor
M.S.Ramaiah Institute of Management, Bangalore

Dr. Frank Sunil Justus. T
Associate Professor
Department of Business Administration, Annamalai University

———————————————— ABSTRACT ————————————————

This research study explores integrating Artificial intelligence technologies to facilitate and optimize flexible working or remote arrangements in the new generation industries. With the increasing need for remote work, organizations across various sectors increasingly rely on AI-driven solutions to adapt themselves to ease work processes, collaborate, and enhance productivity. This paper provides an overview of the flexible work setup, challenges, strategies for successful flexible or remote work, and AI-enabled initiatives and strategies employed by industries to support flexible or remote workspace.

Keywords: Artificial Intelligence, Remote Workspace, Flexible Work, Technology, New-Generation Industries

Introduction : Remote and Flexible Workforce and its Management

Information and communication technologies and the fourth industrial revolution enabled the liberation of the workforce, transforming office-based workers into freelancing and self-driven workers. The technologies that are playing a crucial role are collaboration software services enabled by cloud computing, conferencing and remote meeting software. This flexibility often empowers the organizational workforce and supports employees' aspirations to breathe free air and be more productive.

Another significant advantage of the flexible working model is the ability to build 'Asset-light' business models, where capital investment in making physical assets for the businesses will be minimized. New Zealand is witnessing that in the next two years, 39% of offices plan to reduce their leased office footprint space, and 47% want to increase the co-working space. In the USA, 48% of companies hire freelancers, with the increased work done by them being 168%. The Regus survey says this movement has environmental benefits in reducing carbon dioxide levels and millions of commuting hours to reach a centralized office facility. Many successful business cases are built around this model, e.g., E-commerce giant Amazon has a business model with no physical warehouses for goods, Airbnb successfully runs a hotel chain without owning any hotels, Swiggy with only investment on the delivery chain runs the catering through partnered restaurants, and many more.

Flexible working models advocate adopting a

new model for work, i.e., outsourcing the work that is not under your expertise to specialists working under Flexible working models. This move would help in cost-cutting to avoid building expertise for all the business requirements and focus only on fundamental functions. Opportunities to work flexibly have helped in work-life balance, especially among female employees (Roberto et al., 2023)

The present generation of workspaces must support flexibility, collaboration, and accessible communication. As the data volume increases, Artificial Intelligence tools will become handy in managing this data and devising intelligent solutions for day-to-day business operations. AI-based solutions adapted for the industry come with two advantages: cost minimization and pruned workforce requirements.

The future of the workplace, as per Aildasani from a recent report by Johnson Controls states, the productivity in the workplace matters, not the place of the work, 'Flexi-work contracts' will enable the employees to be accessible to choose their working hours, and another primary parameter of focus is sustainable and efficient resource management. Technological integration between offices and resident employees will increase work experiences and productivity (Arlitt et al.,2023)

Present-generation employees or millennials welcome AI-enabled workplaces and Robots as managers for reasons such as unbiasedness, meticulous maintenance of work schedules, budget management, confidentiality, etc. A new global study by Oracle and Future Workplace, which included over eight thousand employees, managers, and HR leaders across ten countries, revealed that 75% of workers are optimistic, excited, and grateful about AI and robot co-workers. Artificial Intelligence is freeing up the manager's time, and they will be engaged more in productive activities where creativity and

innovativeness are involved. Besides conventional recruitment, AI has been integrated into the next human resource management level. Employees can use digital assistants to schedule their activities during their leave periods.

Various Drivers of Remote and Flexible Work Arrangements

The preference for flexible work arrangements has rapidly increased due to various drivers that have redesigned the modern workplace.

Some of the drivers that have created a path to flexible work arrangements are:

1. **Technological advancements:** Progression in technologies such as video conference and cloud computing made the employees work remotely, and the employer provided such facilities and stayed connected with them. Technology plays a crucial role to do remote work Beauregard (2019)

2. **Workforce Demographics:** The workforce is increasing, and different age groups need flexible options for various needs like fulfilling responsibilities, work-life balance, and commuting difficulties.

3. **Globalization:** since the organization goes beyond geographical boundaries, remote work helps attract employees from different geographical areas with various skills, ideas, and functions in different time zones.

4. **Employee well-being:** Employees' preference for well-being has drastically increased recently, so providing flexible work arrangements to employees helps maintain their mental and physical well-being. The flexibility culture influences employee well-being, and also identifying the employee requirement and planning the flexible policy will protect employee well-being(Hemavathi., 2023)

5. **Initiates sustainability:** Remote work helps

reduce carbon emissions since daily commuting is reduced and supports environmental protection. An organization that includes remote work in its policy initiates a green future.

6. **Promotes savings:** An organization that encourages remote work leads to cost savings for both employer and employee, which helps maintain financial benefits.

7. **Perpetual succession:** flexible work arrangements help business continuity even in difficult situations like pandemic crises.

8. **Work-Life Balance:** Maintaining an employee's work-life balance has become one of the priorities in retaining talented employees. Employees' priority toward work-life balance has increased due to the nuclear family, and both men and women give importance to their professional growth.

Benefits of providing a Flexible Culture to Employees

• Enhanced Comfort and Efficiency: Employees feel more at ease and productive when they can manage their work schedules.

• Family Commitments: Flexibility enables employees to attend to routine family obligations and handle unexpected events, such as family members' illnesses, without sacrificing work responsibilities.

• Participation in Family Events: Employees can actively participate in important family events, fostering stronger personal relationships and work-life balance.

• Professional Development: Employees can focus on professional development with flexible schedules, such as attending training sessions or pursuing further education.

• Reduced Working Hours: Flexibility allows for a reduction in working hours, contributing to employees' overall well-being and work-life balance.

• Commute Time Savings: Employees save time and stress by avoiding long commutes, leading to increased job satisfaction and energy levels.

Benefits of providing a Flexible Culture to Employers

• **Increased Productivity:** With reduced absenteeism and enhanced job satisfaction, productivity levels rise as employees are more engaged and committed to their work. In the present trend, the requirement for workplace flexibility is snowballing. The study proves that with a flexible workplace, job stress is reduced and increased productivity and also helps to maintain a healthy work-life (Paje et al., 2020)

• **Higher Employee Morale:** Offering flexibility boosts employee morale, leading to a more positive work environment and robust team dynamics.

• **Employee Retention:** Flexibility is a valuable tool for retaining top talent, as employees are more likely to remain loyal to companies prioritizing their well-being and work-life balance.

• **Enhanced Employee Engagement:** By prioritizing employee well-being, companies foster a culture of engagement where employees feel valued and motivated to contribute their best efforts.(Hemavathi, 2021). Organizations that implement work place flexibility directly influence employee engagement by maintaining employee well-being.

• **Positive Company Image:** Companies that offer flexible work arrangements are viewed favorably as family-friendly workplaces, attracting top talent and enhancing their reputation in the market.

Strategies for Successful Implementation of Remote & Flexible work

To establish effective remote and flexible work arrangements, organizations should follow these key strategies:

	DESCRIPTION
Follow up with the remote employees	Regularly check and follow up with employees to ensure they have the necessary support and resources for better contributions.
Communicate with employees frequently	Management must ensure an open and frequent communication channel to keep remote teams well-connected and informed.
Offer right technology	Provide remote employees with the essential technology and tools for effective work performance.
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Provide emotional & social support	Design and develop a proper mechanism to support employees emotionally and socially to address potential feelings of isolation.
Set clear remote work standards	Set clear goals, guidelines and standards for remote work expectations and communication protocols.
Promote work-life balance	Encourage and support remote employees to balance work and personal life by setting boundaries and promoting self care.

Trends and Technologies for Remote Work Enablement and its Impact

The various technologies that enable any business to operate uninterruptedly and efficiently in flexible or remote workspaces are as follows.

Accessing files, docs, and computers: The various tools that organizations can adopt, like any desk, TeamViewer, and RDP (Remote Desktop Protocol) to access the documents, files, and office computers in remote work setup to complete the various tasks that are assigned. Technologies will help exceptionally in accessing specific software or files stored on office computers.

5G Technology for uninterrupted network connections: The 5G networks offer reliable, higher bandwidth, reduced latency, and faster connections, crucial for various tasks, namely video conferencing to have meetings, streaming, and accessing cloud-based applications for routine organizational activities.

Collaboration Tools: The various platforms, namely Microsoft Teams, Zoom, slack, and many other collaborative tools, revolutionized the communication process in remote workspaces. The different features of these tools are file sharing, instant messaging, video conferencing, and project management, which encourage teamwork and enhance productivity.

Network: VPNs (Virtual private networks) ensure security while accessing sensitive and confidential data when working remotely. VPNs help encrypt the internet traffic and provide a secure connection to company servers, alert and avoid unauthorized access, and protect against potential cyber threats.

Cybersecurity Solutions: With the upsurge of remote work during and after the pandemic, cybersecurity threats have also increased. The organizations invest in advanced cybersecurity

solutions such as endpoint protection, multi-factor authentication, and security awareness training to safeguard remote employees and sensitive data from cyber-attacks.

Cloud Computing: The various cloud services like AWS, Microsoft Azure, and Google Cloud have enabled and simplified remote work by providing a secure, scalable infrastructure to access data and related applications from everywhere with an internet connection. Further, it reduced the reliance on physical office workspaces and empowered seamless collaboration among remote teams.

Virtual Reality (VR) and Augmented Reality (AR) : VR and AR technologies are for remote collaboration, training, and immersive experiences for remote employees for training, interactive meetings, and to feel comfortable by simulating the physical presence.

Technologies have transformed the way many business functions and employees work. It is very crucial for every business, and the reasons are as follows (Parry et al., 2023)

- **It offers flexibility:** It allows employees to work from anywhere and provides much flexibility to complete tasks and manage the pre-decided schedule. This flexibility option will further enable employees to have a proper work-life balance. Further, it helps organizations to attract and retain the best talents.

- **It enhances productivity:** Cloud-based applications can efficiently manage workflows and communication among remote employees. With this, they can access required information, collaborate effectively, and focus on the core areas of their work. They will not be affected by any physical office constraints (Estanio, et.al 2023)

- **Cost-effective:** Applying technologies will result in cost-effectiveness as it helps in reducing the overhead expenses associated with the business, fixed asses rent, and other utility costs by avoiding the physical space required to complete the business activities. Also, this flexible or remote work will reduce the cost associated with amenities provided at the office, office supplies for the employees, and employee commuting costs.

- **Attract the best and most talented global talents :** Technological support helps attract the best and most talented employees through this flexible or remote option and reduces geographical barriers. Also, it ensures a diverse and skilled workforce across the organization.

- **Uninterrupted business operations:** Technologies support the business in completing tasks without any interruptions due to various reasons like employees' health crises and other natural disasters. The COVID-19 scenario highlights the importance and benefits of remote work and its technologies for successful and uninterrupted business operations.

- **Emphasis on ESG:** Flexible and remote work helps reduce the carbon footprint associated with commuting and office energy consumption. Encouraging and enabling this option for the employees contributes to environmental sustainability and resource consumption and has tighter control and accountability of everyone who works for the organization.

- **Attrition rate and job satisfaction:** Remote work technologies help employees work without the stress of commuting to the office, personal responsibilities, etc. It helps manage the personal front and offers a comfortable workspace, which further leads to higher job satisfaction, lowers employee turnover, and augments employee morale in a big way.

By embracing technologies, organizations could improve work environments, attract the

best-talented employees, retain them for a longer tenure, and maintain a competitive edge in today's digital era(Paiva et al., 2021)

Introduction to AI and its Enablement for Flexi Work of New Generation Employees

Artificial Intelligence is a branch of computer science that creates systems that can outperform various tasks that naturally necessitate human intelligence. The multiple functions include recognizing the patterns, learning from experience, arriving at decisions, understanding the natural language, and completing the task accordingly. Artificial intelligence will think and act like human beings. It tries to mimic human intelligence and solve routine and complex problems, outperforming and adapting to new business scenarios over time. AI requires algorithms and models that ensure the processing of huge amounts of data, extracting meaningful insights, and deriving meaningful decisions.

Algorithms can be characterized as Symbolic AI and Machine learning. Symbolic AI, also called rule-based or traditional AI, works based on the rules set by humans and programmed into the system to solve business problems. Machin learning is a subset of artificial intelligence work based on statistical or mathematical models capable of learning from data without explicitly written programs.ML algorithms identify the patterns and make decisions without relying on the predefined rules set by humans. It covers supervised, unsupervised, and reinforcement learning. As AI continues to evolve, it promises to revolutionize industries, drive innovation, and address complex societal challenges. However, it also raises important ethical, societal, and economic considerations that require careful attention and regulation (Lal et al., 2023)

Artificial intelligence has several applications in business, automating routine tasks and providing personalized assistance to conduct meetings and set reminders. To access specific information, support decisions, train employees, evaluate employee performance, manage the supply chain, optimize workforce planning, and more.

Artificial Intelligence has become the need of the hour in today's organizational setup, especially in facilitating flexible work arrangements for existing and new employees (Astriani et al.,2023)

- **Virtual Collaboration Tools for Remote Teams:** AI-powered communication and collaboration platforms promote seamless interaction with all team members irrespective of time zone and language barriers. The featured tool supports real-time transcription, translation, and background noise cancellation to enhance the quality of virtual meetings and ensure effective communication among remote team members.

  For example, Google uses AI-powered tools like Google Meet, which uses AI for noise cancellation and automatic captioning. In addition, Google Workspace integrates tasks like smart scheduling and automated e-mail responses, facilitating efficient and effective remote work (Khang et al., 2023).

- **Task Automation:** Artificial intelligence automates the organization's routine and repetitive tasks. To streamline the entire workflow and enhance productivity in remote work setups. The tools handle various functions like data entry, data processing, file and e-mail management, and proper scheduling of multiple tasks so employees can focus more on core and strategic work of higher value.

  For example, IBM adopts AI technologies, mainly the Watson platform, to automate tasks and processes for customer service, document processing, cyber security, and IT operations. By harnessing the power of AI,

IBM could automate the process, which has improved the efficiency, cost-effectiveness, and overall effectiveness of its IT operations.

- **Intelligent Scheduling:** AI-powered systems augment schedules based on employee availability, workload, business needs, and preferences. This intelligent scheduling will promote the proper allocation of working hours for full-time, part-time, and remote workers. Further, it helps employees to have a better work-life balance.

  For example, Microsoft uses intelligent scheduling technologies for various divisions and projects. It offers scheduling features that help the project team create, manage, and track activities and schedules effectively and efficiently.

- **Virtual Assistance:** AI-powered virtual assistants support remote employees by scheduling meetings, managing calendars, and accessing specific information to complete tasks effectively and efficiently. These assistants offer real-time support to individual needs and enhance productivity and efficiency.

  For example, Amazon adopts virtual assistance in customer service operations. It supports and assists users in tracking orders, resolving issues, and getting answers to queries quickly and efficiently.

- **Training and Development:** AI-driven learning platforms help remote employees train and develop skill sets for their own and organizational growth. It offers personalized training and development opportunities based on learning preferences, skills, and employee performance to upskill and reskill at their own pace.

  For example, the IBM AI platform can be adopted in education through IBM Watson Education. This platform provides personalized learning experiences that enhance employees' knowledge and skills and improve employee engagement (Cohen et al., 2022).

- **Well-being Monitoring:** AI technologies monitor and manage the well-being of remote employees' by analyzing the data from various communication and employee workloads. It will help identify employee burnout, stress, and disengagement to offer specific recommendations to support an employee's emotional and mental well-being.

  For example, LinkedIn uses a wellness app called Headspace that offers guided meditation classes, sleep exercises, and mindfulness methods to help employees achieve their overall well-being by reducing stress (Felstead et al.,2017)

- **Performance Management:** AI-powered performance management systems offer real-time feedback and insights with remote employees. This system tracks employee progress, identifies areas for improvement, and recognizes achievements, helping them to stay motivated and engaged.

  For example, McKinsey & Company integrates performance management tools like McKinsey Digital Assessment to remotely track and monitor employees' performance. It also enhances employee engagement and manages talent effectively and efficiently.

- **Cybersecurity:** AI-powered cybersecurity solutions help remote employees against cyber threats, namely malware, data breaches, and phishing attacks. The AI-based algorithms detect anomalies, analyze network traffic, and respond to security issues, ensuring data security and integrity of the remote workspace.

  For example, IBM adopted IBM Watson to

manage cybersecurity issues. It is an AI-powered platform that analyzes vast data, identifies patterns, and detects and responds to cyber threats more effectively.

Challenges of Remote and Flexible Work Arrangements Post-pandemic in New Generation Industries

The various challenges of remote and flexible work setup are as follows:

Technological Setup: Technological infrastructure is a primary challenge when the company wants to offer a flexible or remote setup. New-generation sectors must invest in upgrading digital aspects, securing remote access solutions, and providing adequate support for AI-enabled tools to manage the work effectively and efficiently.

Cybersecurity Risks: Many employees prefer remote work and rely on AI-driven technologies. The new generation industries are vulnerable to threats related to cyber security, namely malware, phishing attacks, and data breaches. Cyber security measures are to safeguard and protect the organization's intellectual property and confidential data. The measures include encryption, employee data preservation and retrieval training, and a multi-layered authentication system.

Skills Gap: To leverage AI technologies effectively and efficiently in remote setups, employees must possess advanced digital skills, and this is a significant challenge in a new generation in data analysis, machine learning, and AI development. Skill gap can be reduced by upskilling and reskilling for a successful AI-enabled flexible work setup.

Workforce Management: Organisations face challenges concerning a lack of team cohesion, collaboration, and team monitoring. AI-driven workforce management solutions address these challenges by offering insights on enhancing employee productivity, facilitating virtual collaboration, and promoting team engagement. The solutions require careful planning of employee privacy and autonomy in a flexible workspace (Weideman et al., 2020).

Regulatory Compliance by New Generation Industries: The new generation industries operate in a regulatory environment that governs AI usage, data privacy, and labor practices. Compliance considerations may include data protection laws, labor regulations, and industry-specific standards, necessitating ongoing monitoring and adaptation to regulatory changes.

Ethical considerations: Ethical and societal concerns like data privacy, fairness, transparency, and accountability are significant challenges in the flexible workplace. New-generation industries must resolve ethical considerations by implementing AI principles and promoting openness in AI algorithms and decision-making processes.

Cases of Flexible or Remote Work space/Setup

The companies are leveraging AI- enabled flexible or remote work in the following ways (Knoll et al.,2022)

Google: Google Workspace (formerly G Suite) engages AI to enhance collaboration and productivity in remote workspace. The features, namely Smart Compose, Smart Reply, and Priority Inbox, apply Artificial Intelligence to automate repetitive tasks, improve e-mail communication, and prioritize messages.

Microsoft: Microsoft Teams integrates AI-powered features such as background blur, live captions, and transcription services to enable efficient and effective communication and collaboration of remote employees. Microsoft Azure offers various workforce optimization solutions, like predictive analytics for staffing,

scheduling, and managing workloads.

Salesforce: The Salesforce platform, which has predictive analytics, personalized recommendations, and automation capabilities, helps sales teams work more efficiently and effectively in remote setups. It offers real-time collaboration features, namely chat options, document sharing, and task management, which enables remote teams to work and operate seamlessly.

IBM: IBM Watson Workspace utilizes AI to analyze communication patterns, extract insights, and facilitate knowledge sharing among remote teams, which further helps in improving collaboration and decision-making processes. This platform offers AI-powered virtual agents that automate routine tasks, assist employees with inquiries, and provide on-demand support, further enhancing productivity in remote workspace.

Amazon: Amazon Web Services (AWS) offers AI and machine learning services like Amazon Polly for text-to-speech conversion, Amazon Reckognition for image and video analysis, and Amazon Sage Maker for building and deploying machine learning models, enabling developers to develop better solutions. It provides a secure, cloud-based platform for document collaboration, version control, and team collaboration, facilitating flexible work arrangements for remote employees (Yildiz et al., 2023)

Conclusion

Integrating Artificial Intelligence (AI) technologies transforms traditional setups into flexible working spaces effectively and efficiently in new-generation industries. This study highlights the importance of flexible work or remote work setup, the various challenges faced, and how AI enables an organization to operate, actively engage employees, and better collaborate with remote employees. AI-powered collaboration tools and virtual assistants facilitate seamless work by remote employees.

In conclusion, the strategic integration of AI enablement for flexible working in new-generation industries creates many opportunities to attract talented employees and promote better work-life balance among them. By harnessing AI technologies, organizations can enhance employee job satisfaction and operational efficiency and achieve long-term success in a dynamic environment.

References

- Arlitt, M., Coughlin, T., Faraboschi, P., Frachtenberg, E., Laplante, P., Milojicic, D., & Saracco, R. (2023). Future of the Workforce. Computer, 56(1), 52-63.

- Astriani, I., & Muafi, M. (2023). The Influence of Flexible Work Arrangements toward Loyalty and Innovative Work Behavior Mediated by Work-Life Balance. Telaah Bisnis, 24(2), 102-115.

- Cohen, L. N. (2022). Flexible Work Arrangements and Millennial Engagement: A Study of the Engagement Outcomes of the Perceptions, Tools, and Usage of Flexible Work Arrangements (Doctoral dissertation, Fielding Graduate University).

- Estanio, M., Losbanes, M. G., Vigonte, F., & Abante, M. V. (2023). Flexible Working Arrangements: Its Significance to Employees' Performance and Productivity. Available at SSRN 4619738.

- Felstead, A., & Henseke, G. (2017). Assessing the growth of remote working and its consequences for effort, well being, and work life balance. New Technology, Work and Employment, 32(3), 195-212.

- Hemavathi GP and Frank Sunil Justus T, Flexible Working as an Influencer of Employee Engagement Practices. M.S. Ramaiah Management Review. 2021; 12(01), 1-7. DOI: 10.52184/msrmr.v12i01.104

• Hemavathi, G., & T., F. (2023). Flexibility Culture, Person–Job Fit, and Job Benefits as Predictors of Eudaimonic Workplace WellBeing and Turnover Intention of Employees. Prabandhan: Indian Journal Of Management, 16(10), 46-60. doi:10.17010/ pijom/ 2023/ v16i10/ 171900

• Khang, A., Misra, A., Gupta, S. K., & Shah, V. (Eds.). (2023). AI-Aided IoT Technologies and Applications for Smart Business and Production. CRC Press.

• Knoll, M., Feldt, M., & Zacher, H. (2022). Effects of Technology-Enabled Flexible Work Arrangements on Employee Voice: Toward a Nuanced Understanding. mrev management revue, 33(3), 303-334.

• Lal, B., Dwivedi, Y. K., & Haag, M. (2023). Working from home during COVID-19: doing and managing technology-enabled social interaction with colleagues at a distance. Information Systems Frontiers, 25(4), 1333-1350.

• Paiva, S., Ahad, M. A., Tripathi, G., Feroz, N., & Casalino, G. (2021). Enabling technologies for urban smart mobility: Recent trends, opportunities and challenges. Sensors, 21(6), 2143.

• Parry, E., & Battista, V. (2023). The impact of emerging technologies on work: a review of the evidence and implications for the human resource function. Emerald Open Research, 1(4).

• Paje, R. C., Escobar, P. B. A., Ruaya, A. M. R., & Sulit, P. A. F. (2020, April). The impact of compressed workweek arrangements on job stress, work-life balance, and work productivity of rank-and-file employees from different industries in Metro Manila. In Journal of Physics: Conference Series (Vol. 1529, No. 3, p. 032055).

• Roberto, R., Penna, M., Felici, B., & Rao, M. (2023). Smart working and flexible work arrangements: opportunities and risks for sustainable communities. In Intelligent Environments (pp. 243-283). North-Holland.

• Weideman, M., & Hofmeyr, K. B. (2020). The influence of flexible work arrangements on employee engagement: An exploratory study. SA Journal of Human Resource Management, 18(1), 1-18.

• Yildiz, R. O., & Akkas, H. (2023). Flexible work arrangements in the era of disasters and technology. International Studies in Social, Human and Administrative Sciences–II, Ed. Catalcali-Ceylan A. and Batal S, 157-172.