

A Study on The Future of Work, Innovation, Inclusion and Impact on HRM

Bibekananda Basu

Visiting Faculty, Apparel Training and Design Centre, Ministry of Textile, Govt of India,
Navi Mumbai, India

Abstract:

The innovation is key to success. It is closely linked with the technology, market dynamics and future trends leading to inclusion and sustainability. The future of work is being reshaped by rapid technological advancements, evolving workforce expectations, and a growing emphasis on equity and sustainability. This paper explores how innovation and inclusion jointly influence the transformation of Human Resource Management (HRM) in the digital era. Organizations are increasingly adopting artificial intelligence, automation, and data-driven decision-making, which create opportunities for greater efficiency but also demand reskilling and adaptive HR practices. Simultaneously, inclusion has emerged as a strategic priority, requiring HR to design policies that foster diverse, equitable, and psychologically safe workplaces. The study highlights how HR professionals serve as change enablers, balancing innovation-driven efficiency with inclusive frameworks that enhance employee engagement and organizational resilience. By integrating forward-looking practices, HRM can ensure sustainable talent development, equitable access to opportunities, and a culture that embraces technological and social change. The findings signal a critical shift where innovation and inclusion redefine HR's role in shaping the future of work. The study is important from sustainable development, business policies, corporate governance etc.

Keywords: *Innovation, Inclusion, Future of Work, Industry 4.0, IoT*

1. Introduction:

The world economy has shifted its paradigm from traditional to all-inclusive and innovative practices focusing on the sustainable development. Innovation is the way of our day today's domestic life as well as in the industries. It is a continuous process. In the Japanese system it is known as "Kai-Zen" which means for the better and continuous improvement. It is an ongoing philosophy in incremental enhancements applied to any business, managements, systems with overall significant improvements at any time and at all the time. For any stoppage in improvements, means it is a dead industry. The future of work is undergoing a profound transformation driven by technological innovation, evolving workforce expectations, and increased emphasis on inclusion and human-centric practices. Digitalization, artificial intelligence, and automation are reshaping organizational structures, talent management, and leadership models, creating both opportunities and challenges for Human Resource Management (HRM) (Schwab, 2023; Deloitte, 2024). In this context, innovation is not limited to technological adoption but also extends to reimagining HR practices that foster agility, collaboration, and continuous learning (Boudreau & Jesuthasan, 2021). At the same time, inclusion has emerged as a core dimension of future-ready organizations, ensuring equitable participation and psychological safety within increasingly diverse and hybrid workplaces (Shuck et al., 2022). The intersection of innovation and inclusion forms a strategic imperative for HRM to build adaptive capability, enhance employee experience, and sustain organizational performance in the dynamic future of work (KPMG, 2024; Sanyal & Hisam, 2018). As organizations navigate this evolving landscape,

HR professionals must balance technological efficiency with human empathy to design policies and systems that drive sustainable impact and long-term value creation.



Fig 1: Continuous improvements (Source: Net survey)

The necessity is the mother of invention. In the industries, the day-to-day invention in all respect is necessary, otherwise the industries cannot survive. The innovations are included in increasing production, qualities, value addition which can fetch good earnings in the competitive business world. The innovative ideas or change/modifications of the machine designs to consume less power, less / no waste generation, must have the conception of the ideas of Reduce, reuse and recycle theories to make the products with upgradations. The modernization w.r.t. energy and manpower savings with cost benefits are the need of the hour. The inclusion of new technology such as LED lights, Inverter driven motors, IE 4 & IE 5 motors, inclusion of solar energy, wind mills, are helpful for the energy savings in the industries. The modifications of the new building designs, which are sound proof, light transmission through the roof top, by maintaining natural air-conditioning system such as more tree plantations, around the premises which generate more cool air so that the cost of the air conditioning can be reduced. The details about the eco friend trees are discussed in the later chapter.



Fig 2. Cool down the room temperature

The fig-2 is an example of cooling down the room temperature during summer. The role of the HRD in the area of innovations and inclusions is very essential as whatever the innovations may be, we need skill, strong, dedicated and trained work force including managers who are supposed to drive the force. Proper trainings in the concept of right man at the right place for the right job is very necessary otherwise there will be the reverse reactions. Right from the recruitments, trainings, to understand the skill of each and every employee, engineers and managers, the HRD personnels must be able to create the experts. Today's young generations are after high salaries and perks which can be distributed among the after proper judging their results.

2. Importance of Study

Innovation stands for the progress in life, and growth in economy. It changes the traditional mind set up into more positive direction. It improves competitiveness among the manufacturers, creates job opportunities, give lights to the present day's Engineers and scientists. It generates higher production, efficacy and profit abilities with higher challenges. It improves the GDP of the country. The business grows 90% with innovative ideas and with continuous improvements with sustainability's. To maintain the healthy business world and to forecast of the future business trends, the innovations must not be discontinued. *For the new innovations and products, the customers will be ready to pay more. [ref; Lisa Caprelli , creating your vision]* Innovation brings products or services to market that were not previously available. It is also a tool for companies with stagnant products or services who want to generate excitement with new ideas. There are four stages of innovative ideas: clarify, ideate, develop, and implement. The fig -3 is representing a symbol of innovations.

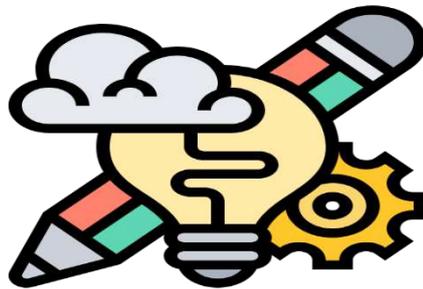


Fig 3. Thought for the innovation

3. Rationale of Study

Today, they can only survive who have modernized and updated the machineries, taken steps in cost control, taken measures for Zero waste tolerance, adopted value added production, recycled the waste in to upgraded status, fought with the climate change. 85% of the economic growth depends of innovation (Julia Kylliainen). For the better economic output, it is necessary to increase the number of inputs for the better productive processes. Secondly, it is to come up with new ways to get more output from the same number of inputs. There should be continuously driven in the Product improvements. The sustainability with innovations reduces sickness; create jobs, fights with poverty and hunger. Environmental Sustainability: The climate change is the growing challenges in the innovations of the industries to survive with the rising costs and power.

4. Objectives of Study:

- To examine the role of technological innovation in transforming HRM practices and workforce management in the context of the future of work
- To analyze the impact of inclusive HR strategies on employee engagement, well-being, and organizational performance
- To explore how innovation and inclusion jointly contribute to shaping sustainable and human-centered HRM models for the future workplace

5. Review of Literature

The recent literature highlights that the future of work is being shaped by a convergence of digital transformation, demographic shifts, and changing workforce expectations. Studies reveal that automation, artificial intelligence (AI), and analytics have redefined traditional HRM functions, shifting their focus from administrative efficiency to strategic value creation (Singh et al., 2025). AI-driven HRM has enhanced decision-making in recruitment, employee engagement, and learning, while promoting data-informed insights that strengthen organizational agility (PwC, 2025). However, researchers emphasize that technological disruption also necessitates new ethical considerations such as data privacy, transparency, and accountability in people management practices (Singh et al., 2025).

The innovation in HRM extends beyond digital tools—it encompasses the design of adaptive work systems that foster creativity, collaboration, and skill development. Ulrich's competency framework (2025) positions HR as a strategic partner driving transformation through talent architecture, leadership development, and value-based culture building. This aligns with the emerging “human sustainability” paradigm calling for HR functions that balance automation with empathy and social responsibility (Deloitte, 2024). The adoption of innovative HR practices is enabling organizations to optimize performance while nurturing meaningful and inclusive employee experiences in hybrid work models (PwC, 2025).

The inclusion has emerged as a critical pillar of future-ready HRM, emphasizing diversity, equitable opportunity, and psychological safety as strategic assets. Research shows that inclusive HR policies enhance engagement, innovation capability, and retention among diverse teams (Shuck et al., 2022). As the future workplace grows more flexible and boundaryless, inclusion ensures that digital transformation benefits all segments of the workforce, promoting sustainable growth and organizational resilience. The intersection of innovation, inclusion, and HRM reflects a paradigm shift toward human-centered strategies that integrate technology with trust and belonging—hallmarks of success in the evolving future of work (KPMG, 2024).

6. Discussion and Analysis

Natural Innovations: There are some small plants / workshops who cannot afford Air conditioning especially in summer, they go for the tree plantations that generate cool breeze surrounding the area and returns several aspects such as cool air, recycling of the leaves, woods, fruits (in particular cases) etc.

Trees that provide the maximum cool breeze typically have the following features:

Large canopy spread → more shade, reducing surrounding temperature.

Dense foliage → improves evapotranspiration (release of water vapor, cooling air).

Broad leaves → better transpiration than needle-like leaves.

Best Trees for Cool Breeze (Tropical / Indian Context)

1. Neem (*Azadirachta indica*) – Tall, wide-spreading, drought-resistant, and excellent for cooling.

2. Peepal (*Ficus religiosa*) – Large canopy, high oxygen release, excellent shade.

3. Banyan (*Ficus benghalensis*) – Huge spread, excellent cooling and shade.
4. Rain Tree (*Albizia saman*) – Fast-growing, umbrella-shaped canopy, very popular for roadsides.
5. Mango Tree (*Mangifera indica*) – Dense foliage, strong cooling, and shade.
6. Gulmohar (*Delonix regia*) – Attractive flowering with good shade and cooling effect.
7. Ashoka (*Polyalthia longifolia*) – Slim but effective wind and heat reduction when planted in rows.
8. Jackfruit (*Artocarpus heterophyllus*) – Dense crown, good cooling effect.

Why These Work Well.

They combine shade + evapotranspiration, which can lower local temperature by 2–5°C under the tree. Large, spreading crowns improve airflow and make the breeze cooler.

- **Innovations in Textile Sectors:**

The author being a textile professional presents the scenarios from textile industry. Starting from Blow Room, the biggest innovations are optical Bale laydown, bale management which is helping in mixing of the fibres according to their properties to achieve in consistency in quality. Automated waste management system where the unwanted foreign fibres are removed (the details are referred from NITRA publication; developments in yarn spinning Technologies). All the Carding are directly Chute-fed from Blow room. The Carding productions are increased by widening the Carding Engines. The quality of the Carding Sliver is improved with automatic and that of uniform feed from the Blow Room. The auto leveller with sensor monitoring system with that of AFIS (Advanced fibre information system) used to get the quality of the slivers. In combing Drawing process, the use of automation in can change transport system is implemented. The Draw Frames are together linked to save the space and time. The Comber heads are used in 10-12 heads per machine. The better yarn properties achieved in modern Spinning Technology by AI and Sensor systems.

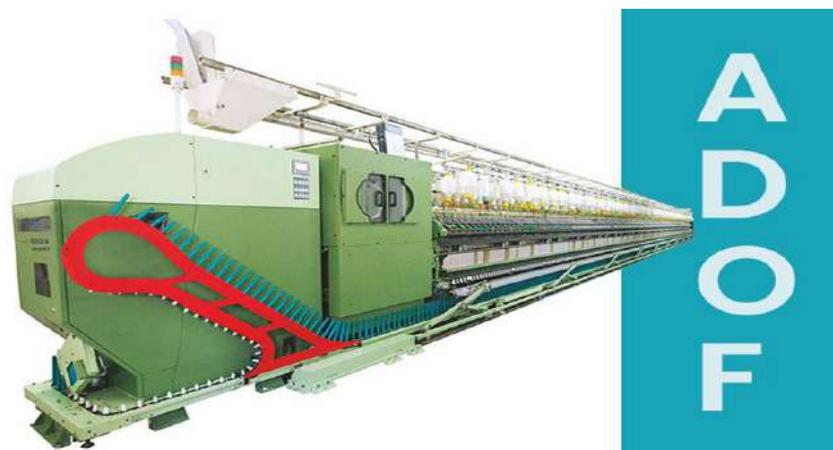


Fig 4. Link mechanism R.F to Winding machine

In Roving and that of Ring Frames the automatic doffing system with the larger size of the machines enable to energy savings, labour and space saving. The Ring Frames are having the direct linker with the Winding machines and with less package handling. The winding machines are designed with auto doffer and directly sent to Warping. (fig – 4) The Compact Spinning system is another way of innovation.

The Rotor Spinning and Air jet/Vertex spinning have come up with complete automation including maintenance and producing defect free packages of 5.5 kg and the delivery speed of 600 mpm with high energy efficiency.

The Information Technology: Today's all the machineries are equipped with sensors, drives, computer speed and access to massive data storage include "cloud" with the advantage of data analysis at every stage. All these technologies are able to give optimum production with quality efficiently and economically. Today's developments are directly related to economics.

The Winding machines are designed with high level of quality, efficiency with that of auto doffing mechanisms, auto splicing, energy savings, fetching higher production and waste control and linked with digital control. The predictive maintenance is done through AI thus increasing the life span.

The Warping machines are designed with automation, higher efficiency, precision with technical textile and for high-speed Weaving. It has automatic Creel change, advanced tension Control system, AI -Power optimised for reducing waste and to increase the throughput. They are designed with higher speed, reduce energy consumption, auto knotting/splicing. There is software developed for easy developments of pattern designs and sensor control tension variation and vibration. The figure 5 shows a fully automatic Warping machine having the automatic lease formation, yarn monitoring, least manual intervention, and enhancing efficiency. The speed is 1000MPM.



Figure 5: The NOV-O-MATIC fully automatic, sectional warping machine
© Karl Mayer

The Sizing Technology has come to a far advanced stage with bio-based ingredients, better size formulation, use of nanoencapsulation, better stretch control, with digital technologies and sustainability's. There is development in spray application, easy drying, reducing waste generation, and elimination of all the complicated mechanism. Today, it is high speed with 500 MPM, and with the help of AI & IOT, the tension, stretch control, and size pick up is done with minimum requirements. Less water consumption, precise temperature control, and having the automatic fault analysis system.

Loom Shed: The weaving loom industry is experiencing significant innovations, driven by advancements in automation, digital technologies, and sustainability. Key trends include the integration of sensors, AI, and IoT for real-time monitoring and optimization, as well as the development of eco-friendly machines with reduced energy consumption and waste. Additionally, there's a growing emphasis on versatility, with machines now capable of handling a wider range of materials, including technical textiles and specialized fabrics. In each type of model, the WIR has increased and now it is as high as 6088 WIR with the loom

speed of 3230 ppm in Sulzer M8300 Model. Tsudakoma ZAX-190-2C model is now capable to run at a speed of 1800 PPM with WIR 3222. The magnetic force is included in weft insertion system where 60% energy is saved in comparison to Air Jet, Water Jet machines. Please refer fig – 6.

Endless Innovation: With the increase in loom speed, the weaving preparatory section, spinning yarn quality need to be improved! That innovation is going on.

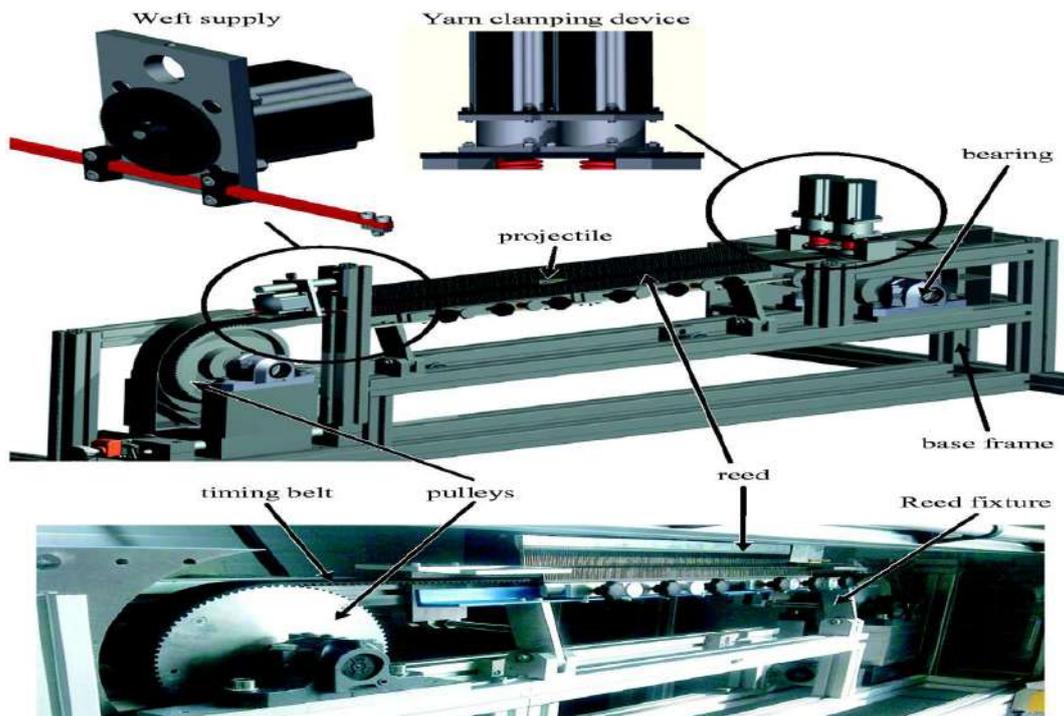


Fig 6: Image of the magnetic weft Insertion

In the context of modern fabric developments there are the innovations in double cloth, 3D Weaving, and Triaxial weaving, major progress in Technical Textiles and Composites. There are the improvements and innovations more in digitization. There are also good improvements in automation, cost control, monitoring of production and performances, data storage in super computers and data analysis. The cost savings are done by increasing Efficiency, by reducing waste, to optimise energy consumption. These include electronic jacquard looms, direct drive systems, introduction of digital technologies like IOT and that of AI. There are tremendous developments and innovations in the Dobby and Jacquard sections where everything is computerised with electronic system. Any design/pattern can be manufactured with a very short time. Thanks to IOT and AI.

- **Polyester Sector:**

In competition with Natural fibre, the Polyester sectors have come very fast as far as innovations are concerned. The Innovations are emphasis on yarns developments, in DTY, FDY, IDY in micro, super micro filaments yarn, finest to coarser denier, soft crimp, high bulk, texture with cotton feel, versatile yarn with features like moisture wicking and enhance aesthetic looks and there is innovation in partial bio degradable.



Fig – 7. Auto Craft winder in FDY.



Fig – 8. DTY Mc.

The manufacturing processes are developed with PET bottles and recycled polyester waste. There is huge saving in yarn dyeing system after the introduction of Dope dyed yarns. The Texturizing machines are designed with high speed of maximum mechanical speed of 1500 MPM. The machines are introduced with Godet by eliminating the apron system by improving the yarn quality. Almost all the machines are attached with auto doffing and splicing. There are energy savings by reducing the heater temperatures and adjusting its length. Close heaters are introduced as energy savers. The Creel managers UNITENS are informing about the position of the supply packages. ATT- Advance technology is added for the unique flexibility in the package geometry. All the machines are attached with OLT for the instant information about the yarn quality, breakage rate and down times. The FDY machines are having auto craft (fig – 7) double sided winders and there is the introduction of light weight motors by removing the heavy-duty motors with huge energy saving.

6. Industry 5.0

The industry 4.0 in the connection between the manufacturing with digital convergency among the industry, business and process known as Industrial Internet of Things (IIOT). Here the decisions are made without any human involvement or as per the set up. This is the introduction of Cyber -Physical System with more comprehensive, interlinked and holistic approach to manufacturing. It empowers business owners to better control and understand every aspect of their operation and allows them to leverage instant data to boost productivity, improve processes, and drive growth. Industry 5.0 offers the opportunity for manufacturers to optimize their operations quickly and efficiently by knowing what needs attention. It is widely accepted by the several Industries for the prompt and accurate decision without any human error and involvement with less manpower. The sites can be controlled from the any corner of the World. It is the integrating the human creativity and skills with the efficiency of the machineries and advanced Technologies like AI and robotics. Industry 5.0 supports efficiency, waste reduction, and develops environmentally production procedures. It integrates human well-being, sustainability, and resilience into the core Industrial Process. It emphasizes industrial production with economic growth with social and environmental well beings.

- **The Impact on HRM:**

With the continuous innovations and developments in all the industries w.r.t modernisation, automation, cost control, product developments, zero waste conception or waste recycle up gradation; to run a plant with minimal manpower or with only high skilled work force, we need technical people in all categories at every steps. Now all the Institutions right from the

ITI, Diploma to any upwards level, the syllabus and the courses need to be modified coping with the above Industrial needs. In the normal graduation course also, the ideas about the new future are to be introduced. The industries must have the right selection procedures with the growing demands for the high skill persons. The professionally managed branded Organisations like to select the freshers from the branded colleges by offering higher remuneration with the pure filtration process in the interview like written examination, group discussion, mental ability testes and above all on the subjects which the organisation requires. The time frame is allotted to the freshers to adopt the required knowledge that help the organisations. Some organisations select freshers on the merit basis and offer a sandwich course after which the candidates are retained with higher start up. The organisations that cannot spare time for the trainings, like to absorb the experienced persons on readymade basis. The Organisations must develop its Engineers, work men as per their day-to-day developments by proper skill developments, hiring experts, depute for the trainings. All the employees from bottom to top are to be motivated with the new and newer innovations known as “KRA” and their prosperity by and large depends on KRA Results. The HRM plays the most important roles in building the workmen.

7. Conclusion:

Innovations are the right way to develop the Nation, growing GDP, Economics, Employability's, which is an essential tool for every Industry. Stoppage of Innovation means the organisation is a non-perspective body. In the Textile sectors, in innovation is huge right from the Blow room to Spinning through Ring Frame, OE, and that vertex up to the cloth production. No organisation can survive with cost and waste control measures and with automation and modernisation. Industry -5 is a new path for the higher developments with sustainability and humanities.

References

- Boudreau, J. W., & Jesuthasan, R. (2021). *Work without jobs: How to reboot your organization's work operating system*. MIT Press.
- Deloitte. (2024). *Global human capital trends 2024: The shift to human sustainability*. Deloitte Insights.
- KPMG. (2024). *The future of HR 2024: Leading with purpose in an age of transformation*. KPMG International.
- Sanyal, S., & Hisam, M. W. (2018). The impact of teamwork on work performance of employees: A study of faculty members in Dhofar University. *IOSR Journal of Business and Management*, 20(3), 15–22.
- Schwab, K. (2023). *The fourth industrial revolution*. World Economic Forum.
- PwC. (2025). *The way we work – in 2025 and beyond*. PricewaterhouseCoopers.
- Shuck, B., Collins, J. C., Rocco, T. S., & Diaz, R. (2022). Inclusion and meaningful work: Connecting inclusion perceptions with meaningful work and turnover intentions. *Journal of Managerial Psychology*, 37(1), 35–49.
- Singh, A., Kushwaha, D., Kumari, B., Srivastava, G., & Agrawal, N. (2025). AI in HRM: Revolutionizing the future of work. *International Journal of Human Resource Studies*, 7(1C), 39–50.
- Ulrich, D. (2025). Future-proof HR competencies and the new HR agenda. *The European Business Review*.