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Industry 4.0 and Employee Wellbeing: The Mediating Role of Creative Climate

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ABSTRACT

This paper analyses how Employee well-being influences the working style of an organization in Industry 4.0. Manufacturing industries have experienced fast technical progress and development due to the Industry 4.0 revolution. Technological advancements allow for more efficient manufacturing processes while also bringing about changes in human work, which may pose new dangers to employee well-being and put existing skills and expertise to the test. Change resistance, the digital skills gap, employment hazards, expanding socio-economic inequities, a lack of industry-wide collaboration, leadership, and organizational culture difficulties are all revealed in the findings. Through socially responsible human resource practices, we show how HRM can be a critical enabler for long-term Industry 4.0 development. Sustainable Human Resource Practices, multi-stakeholder collaborations, holistic talent management, change leadership, inclusive knowledge sharing, education research, smart technology for upskilling and retention, and rewarding inclusive Industry 4.0 concepts are among them. Finally, we discuss potential research directions. Literature Review highlights the importance of providing information and opportunities for Employee well-being, in order to support Industry 4.0 transformations without impacting on workers' motivation.

Keywords: Industry 4.0, Sustainable HR, Employee Wellbeing, Employee Creativity.

I. INTRODUCTION

Industry 4.0 (I4.0) is a contemporary industrial system powered by information technology (IT) that aims to achieve a sustainable society. Manufacturing has benefited from innovative technologies that deliver maximum output while maximising resource utilisation [1]. (Kamble et al., 2018). Cyber-physical systems (CPSs), the Internet of Things (IoT), and other contemporary technologies have opened up new avenues for industrial development, allowing businesses to improve their production and efficiency. I4.0 in-corporates big data (BD), IoT, and artificial intelligence (AI) for leveraging manufacturing operations, according to [2]. I4.0's potential for creating sustainable industrial value creation across social, economic, and

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environmental aspects via enhancing resource efficiency is thus extraordinary.[3] Over the last few decades technology has empowered the working style of employees in an industry. Embedding software creates a network which helps to store the information at a higher level [4]. Due to digitalization a framework for new features of Industry 4.0 is being used to create a good impact on industry and employees.[5]. Employees are the one on whom the industry is built. The whole output depends on them. In the present scenario it's really important to focus on Employee Well Being. Wellbeing is divided into two concepts that is positive and negative perception of employees towards work which also reflects the attitude towards work in an organisation. Although flexibility is also provided, it is also necessary that employees should be multitasking and ready to work in stressful situations and prevent Employee burnout and growth in such an environment.[6]As time passes by, the working criteria and ability also varies. Thus, employers also need to understand the employees requirement and behaviour for creating harmonic balance in an Industry. The study conducted by Harvard Business found that employees who are mentally, physically and emotionally stable are good in delivering their performance at the workplace and employees who are not good at these factors contribute less towards optimal performance[7]

(A) Need of industry 4.0

The goal of Industry 4.0 is to transform ordinary machines into self-aware, self-learning machines that can improve overall performance and maintenance management by interacting with their surroundings [8]. The goal of Industry 4.0 is to create an open, smart manufacturing platform for industrial-networked data applications [9].Monitoring data in real time, tracking product status and positions, and storing control instructions Industry 4.0's major requirements are industrial processes [10].

(B) Literature Review

Subsequently, various changes occurred with Industry 4.0. The business models created a different impact in the society which has diverted the working environment at various stages. Circular economy plays a major role in the growth of Industry 4.0. There have been advanced technologies introduced by the administration. The fourth industrial revolution is useful for the upcoming changes in the company. The Industrial revolution was not easy if the changes were not met properly. Advanced technologies used are much more important to bring the revolutions change in all sectors which are demanded for further production.[11] Work family conflict, job autonomy and work hours reflect the work Employee Wellbeing. Employees who work long hours are found more unhealthy and have less workaholic tendencies. The spousal support is

considered unique in encouraging Employee Wellbeing concept. Workaholism and wellbeing in non- western countries is also dependent on the phases occurring during the society work.[12] It's been observed that Employee Satisfaction is taken for granted which creates a “business case”. Employees' support is valuable in managing the organisational process whether it's financial or non- financial. The measures were adopted like performance evaluation or compensation in order to maintain the employees satisfaction in an organisation which is good for better output and enhances the productivity of employees.[13] Work plays an important role in Employee Well Being. The model is used for further understanding of wellbeing in an industry. In the pandemic situation changes occurred drastically the work became technology dependent and increased delivery services. Automation brought various changes like climate change, changing distribution of exposure and disease, changing demographics and social inequalities. The main motive of this study is to find out the factors affecting employee wellbeing and work accordingly. Helps in finding inequalities responsible in finding the health, safety and wellbeing of employees at a particular point of time in adopting various advanced techniques for further completion of work.[14]

Social media is a great platform to communicate and create awareness among employees in various fields. The importance of Social Media among employees with Industry 4.0 the technology requirement has boosted the working criteria. As social media has brought various changes in the working style of employees. The constructs like emotions, mood or attitude forms the Employee Wellbeing & happiness. Social media acts as a platform which connects people. Organisation etc. Today's generation can handle social media well and further look towards benefits of it. Through new & innovative methods available in conducting different kinds of work. Employee Well Being is dependent on both internal & external factors. Proper framework will be helpful for development of an organisation.[15] Wellbeing is multifaceted and difficult to define and measure .[16] Despite the fact that there is a continuing global interest in the levels of international and national well-being, the term remains ambiguous and requires clarification. This growing concern about one's well-being also applies to workplace well-being[17].Employee well-being, or work-related well-being, has become a hot topic in recent decades.in the world of business (Grant et al., 2007) [18]. It's a wide term that encompasses both cognitive and affective aspects.components [19]. Employee well-being should not be confused with employee satisfaction.general well-being, because people's lives are so different. The increasing digitization and integration of information technologies, which includes tools like the internet of things, is referred to as "I4.0." [20] cloud-based systems [20], cobots [21]), big data analytics [22], additive manufacturing [23] and cyber-physical systems [24] In a "smart

factory" [25, 26] people, machines, and goods can communicate with one another both physically and virtually [27], which can lead to greater sustainability [28]. We draw attention to the aspirational nature of I4.0; unlike previous industrial revolutions, which were conceptualised and linked with technology mostly after they had occurred. Wellbeing is a very important variable in an industry, it helps to create a positive relationship between workplace and among employees. Such a situation improves the performance which also leads to employees efficiency and effectiveness. Personality trait plays a major role in the context of Employee Wellbeing in an industry which prefers internal and external organisational achievement. Factors like absenteeism, poor performance, turnover are highly dependent on Employee Wellbeing.[29, 30] The pandemic situation has given various opportunities to organisations through work from home basis. Work from home was found more convenient by organisations as employees can work remotely as it saves time and help in expanding on something more productive [31] subjective wellbeing and mental health are very important as it plays a central role in the health of an organisation [32] wellbeing serves as a precious stone for various organisations.[33] Toxic workplace leads to various problems among employees which becomes difficult for the organisation to cope up with the mental stress also. This initiated the Employee Wellbeing programme.[34] As a toxic environment affects the mental and physical health of employees in such a situation Employee Engagement creates a good connection among employees and daily work routine which is helpful for creating an enthusiastic environment.[35]. There has been a paradigm shift in I4.0 through upskilling and modernising HR operations in the business process.[36] bag et al. 2020,with the changes in workplace the health of employees is also getting affected which leads to technostress among employees. The health issues at the workplace affects the quality of life. [37] There is a need to understand the applications deeply to know the newly developed features in an organisation. Various research has been going on in the field of AI to verify the impact of technostress [38] Employee resistance to new technologies [39] and inadequate management of its consequences on other organisational aspects [40] are two reasons why its deployment frequently fails. Workers' disapproval may result from mistrust, a sense of control, and dread of losing one's job [41, 42]. In addition, the necessity for acceptable technological and digital capabilities as well as the lack of one of the most important and crucial barriers among those mentioned in the literature is training related to the requirement for investments, IT security, business size, and modifications to cultural or commercial norms model as well as a deficient infrastructure [43]. While information and communication programmes are essential to spread awareness of changes throughout the entire firm.

Industry 4.0 has significantly brought various changes in terms of cost, quality and efficiency etc. safety is also an important part for every organisation in the context of employee wellbeing. It's only a goal to be achieved but a priority in an organisation. Job security is a fear factor for employees as it depends on the employees performance and whether the organisation accepts it or not. In this burgeoning world of Industry 4.0 various ways of working have changed. Trust disappears slowly but can be maintained by creating a good efficient leader who can easily handle the implementation and operational process.[44]

Mental workloads in the current scenario results in destruction of peace, health and inefficiency to accept the work. An employee also thinks of improving their health and being efficient enough to face the challenges. Employees are of both Intrinsic and Extrinsic. Such employees have different mental conditions which may affect the workers performance in an organisation.[45]

The fourth revolution has brought various changes in the context of Employee behaviour towards technology. Application pull (industrial demand) and Technology push (technological advance) acts as a driving force. Cyber physical systems, AI, IOT, Cloud computing systems etc. such techniques make the work completion faster. Industry 4.0 covers the area globally but its execution is different at various places. The trilateral cooperation embraces positivity in this revolution.[46]

The COVID-19 has brought changes in the working style of an organisation by working remotely and providing flexibility to the employees. There have been various stages of Employee Wellbeing which is divided into physical, social & psychological wellbeing. [47] The PERMA model is developed to analyse the Employee Wellbeing at various stages. P- positive emotion, E- engagement, R- relationship, M- meaning, A- accomplishment/achievement. This will help to develop the relationship between employee and organisation (in adopting digital technology) to extend to a better workplace relationship.(48)

Ethics plays a major role in an organisation which is also cooperative in increasing profitability as well as in influencing human behaviour [49] with the rise in fourth revolution it brought required changes which proved to be worthwhile for the employees.[50] Digitalisation has made the work execution more advanced and ubiquitous through automation, extensive automation at the workplace makes it specific and complete at desired time. [51, 52] data wealth and intelligence coordinates well in delivering the work more accurately [53]. In Industry 4.0 the automation helps in performing beyond human limits, attains the objectives which are hard to achieve in a scheduled time[54] brings innovation by surfing, exchanging and networking

which highlights more autonomous projects which initiate productive work.[55]. Sometimes technology also proves to be unpredictably risky because at some point human interactions with intelligent systems may result in unpredictable risk. Human welfare is also important to operate AI on a better track.[56, 57]. Technology is bringing variations in work globally. The fourth revolution is gradually forming a new environment by upskilling the skills of employees. The resistance and failure occurring in Industry 4.0 can be used by observing the requirement and accordingly providing a solution.[58] The main goal of Industry 4.0 is to achieve effectiveness and productivity at a higher level.[59], small medium enterprises face challenges due to technical glitch. On the other hand, big organisations accept the challenges and smoothly work with the latest technology.[60] Adopting technology is always difficult for Small medium enterprises. Technical issues affects the employees performance which leads to slow growth of an organisation and indirectly affects the employees mental strength[61]

In this rapidly moving world there is a need to focus on spirituality. As, spirituality attracts positivity and benefits the organisation to work well. Fit and healthy workforce is valuable for an organisation. Further, focuses on Employee Wellbeing by improving overall quality of employees in terms of emotional, health, psychological and spiritual well being [62]. The concept of wellbeing revolves around the terms such as quality of life, happiness, health or material condition[63] gradually the health and wellbeing has become a priority of employees [64]. In the 21st century the employee needs to have physical, social and mental wellbeing[65]. The employees health can be affected through various factors such as conflict, stress, job insecurity which affects the employees health. An Individual's ability is also responsible for keeping employees well. Making the use of resources effectively also affects the employees behaviour in an organisation.[66] In Japan companies are treated as their family. The three treasures followed by Japanese countries are as follows: lifetime employment, promotion by seniority & company union.[67,68]. Systematic effort attracts positive transformation among work teams, organisation through creating awareness and motivation.[69]

To record the performance of employees, the constructed feedback is considered as a universal management practice [70]. Once the employee gets appraised of his/her work he/she gets motivated and enhances the performance towards betterment jung[71]. FLE technique helps the organisation to perform better by providing both organisations to perform better by providing both psychological and technical support[72].The concept of FLE is used to achieve the goal of the organisation which also helps in improving psychological ability [73]. Target to prevent poor health refers to workplace health and wellbeing practices through skills and manage risks[74, 75] wellbeing affects the employees it provides the physical strength to perform their

activities (la montage[76] The work from home opportunity during pandemic has made the employee tedious and lazy as they dont wanna leave their comfort zone.[77] the inclination towards work from home after pandemic situations the organizations are voicing towards hybridization. The concept of Hybrid model was given by [78]after pandemic employees were asked which place felt best to work at home or workplace [79]. It totally depends on the activity performed, everything has its own preference whether home or office [80] the workplace preference depends on the choice, female workers prefer to work from home. Gender, locality, behaviour all play a major role in selecting preference. [81]employee dissatisfaction may lead to sensitive issues in the organisation due to unexpected motives, uses and practices.[82] as the pandemic situation has given mental stress all over throughout the world. At such crucial stage health & productivity of employees is very precious[83, 84] after reopening of offices the employees started coming back on track and it's a key point of concern(igoe 2021)[85] safety adaptation is an innovative action introduced by an organisation to solve safety issues among employees [86, 87] to prevent wellbeing related queries the vision zero concept is used to ensure healthy work [88].Employees emotional tendency and cognitive tendency as an individual reflects the change to adopt status quo and step forward to achieve desired goal[88]. If an employee is ready to accept the change and perform the role assigned then there are more chances to generate motivation among employees..[89]. Remote working has slowly started increasing[90]. Many of the workers found this technique comfortable and positive [91] The rapid shift of work towards remote work has created a challenge for various industries to practise remotely on a continuous basis [92] (Keeping the employees' administrative needs in mind various organisations are accepting the permanent shift to remote working as a hybrid model and digital skills [93]. Through remote working an employee can work from anywhere such situation creates a sustainable and healthy way to work in present era of technical world [94] As physical and mental wellbeing is considered good as an individual in the same manner, employee wellbeing is an indication of well maintained organisation.[95] organisational support refers to deep concern for the wellbeing of employees to present a better work environment.[96]. The cruel and violent treatment of employees leads to their safety concern. [97]. Here, the concept of corporate philanthropy is responsible for social concern in an organisation[98]. Employee is an intangible asset for an organisation if taken care of well then it will result in better growth.[99]. Eldercare in the current scenario is more demanding than childcare, as it is found more helpful in ending the negative impact within the organisation[100]. There is a need for a flexible workplace to decrease absenteeism and turnover. If the work is provided remotely then there are more changes of employee wellbeing.[101]. Employees' needs and wellbeing are

part of organisational interest such as ILO (International Labour Organisation) [102]. For the reason of wellbeing various studies started by organisations to know what are the reasons affecting employee wellbeing due to less satisfaction in job [103]. In such a situation, a person's job fit can somehow solve the problem of employee wellbeing as it makes the employee fit in job demand and perform the activities accordingly[104]. The organisation procedure interacts employees & management in a respectable manner to bring satisfaction among employees, this will lead to employee wellbeing.[105]

Due to individual desire the worker need to create a balance between work life and personal life in this technological world.[106]

The health and safety of employees considering the activity of employees, a new and advanced level of employees is being taken care of which admits every small and big function of the workplace. The dependent (orientation sharing, internal recruitment etc.) and independent variables(job satisfaction, employee commitment) has been created to analyse the workforce behaviour in various situations to find the gap among the workforce and workplace.[107] The current scenario of industrial enterprise in the context of technology. In the coming years there will be the biggest change in the working culture of industries due to automation, robotics etc. which will also lead to new job opportunities. Learning will also occur in the workplace[108] There are employees of every skill set. Now, it's the responsibility of management to work accordingly. various interventions also found among employees and the workplace. But the big networking style at different places and take action on conflicts to maintain employee wellbeing.[109]

(C) Research Methodology

A systematic literature review approach was used to evaluate each piece of literature that was discovered. By combining theories from several domains and subfields, this method improves and offers collective insights. A thorough search was conducted as a first step in starting the evaluation procedure. Public databases like Google Scholar, Emerald , Science direct etc. were used for the search.

II. ISSUES AND CHALLENGES IN INDUSTRY 4.0

Employee Wellbeing is considered as a subject of interest in research either from a physical, psychological or social view.[110] . Issues like job insecurity, control at work, work hours and managerial styles are big concerns for organisation.[111] Industry's working culture is shifting towards a sustainable, eco-friendly way of production in an industry. Initiating digital work has become a new trend. There is also a need to consider occupational health as the whole industry

depends on the workforce. Creating a good healthy & sustainable environment brought various changes in the working style of employees which is a very important part of employees. Anywhere, anytime working concept has increased the flexibility in working style of employees. Thus, industry 4.0 also helps in professional development of an industry.[112] As Information Technology has grown vastly throughout globally and influencing various business models. Industries adopt enormous changes and it also leads to adopting new technologies which are responsible for betterment of employees as well as industry. Robotics as part of the digital world has made the industries realise that work can be done easily but requires skills. Managing data is another big task for employees. Digital technology has helped in improving data management by providing facilities for working more effectively and efficiently.[113] . Manpower is the major driving force in an industry as Industry 4.0 has brought a paradigm shift in work culture and working style of employees. Slowly, the transition took place as daily routine is fixed for several employees. Working other than routine leads to technostress and mental exhaustion which affects the health of employees. There is a relation between employee health and technology as more and more facilities are provided to employees which proves towards the betterment of employees and further contributes to the improvement of an industry. Reduces the job risk of employees knowing how to deal with the perplexed situation. Brings flexibility in work due to remote working areas. Every skill plays an important role in workplace.[114] The research results showed the following factors: a possible risk of data leaks and security breaches, significant changes brought on by digital transformations, and employment risk and employee insecurity. Additional investigation can be done in this way to determine whether these issues are just having negative effects in the future. They may also result in some advantageous job consequences if they are probing. It's conceivable that it's negative. When evaluated from a long-term perspective, impact factors may provide certain advantageous effects on both the psychological state of the worker and their performance in the workplace [115]. The digital or IT resources have a three-fold effect on digital infrastructure, the technical knowledge attained by employees' increased expertise, improved customer focus, and beneficial synergies All these assets can stimulate innovation.[116] We refer to an applied new practice, product, or working approach as innovation, which differentiates from innovations in that the latter may not be adopted. Adoption of innovation is the choice to move on with the adoption of a new procedure, item, or mode of operation[117] whereas adoption of employee innovation is the willingness of personnel to adopt innovations, meaning they must not just intend to use them. but also put it to use in their actual work. In this study, we examine workers. Although the majority of research on the topic of innovation adoption focuses on

management (as decision makers) or customers (as purchasers) to be more precise, we use employee usage of an invention as our gauge

III. CONCLUSION AND FUTURE WORK

It is evident from the study that employee wellbeing is the most concerned part for every organisation. There is a direct link between employee wellbeing and organisational progress. An employee is a central figure of an organisation and has a multi-disciplinary approach. Through literature review it's clear that Employee Wellbeing is a major issue in today's rapid moving world. Workers also desire to contribute to their organisations, according to this study. It's usually a matter of coming to an agreement on a vision, determining the best match for their individual contributions, and being open to feedback. As a result, the custodians of an organisation must first listen and then collaborate. Management teams set goals and expectations that can be praised when they are achieved. It's also found that many organisations are still lacking behind in fulfilling employees requirements in terms of mentally, physically, emotionally and psychologically. Employee involvement also integrates employees' personal aspirations with the small business vision and medium-sized businesses, resulting in low productivity and decreased performance. In order to overcome such issues with employee wellness programs, a virtual summit of employees can be conducted to meet the future goals to enhance the employees performance as well as organisation's growth.

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