

ROLE OF HUMAN CENTRICITY, SUSTAINABILITY AND RESILIENCE ON WORKFORCE AGILITY IN INDUSTRY 5.0

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<p>KEYWORDS</p> <p><i>Human centricity, Industry 5.0, Resilience, Sustainability, Workforce agility.</i></p> <p>Received on: 10-05-2026</p> <p>Accepted on: 07-06-2026</p> <p>Published on: 06-06-2026</p>	<p>Abstract</p> <p>Purpose</p> <p>The paper intends to analyse the influence of human-centricity, resilience and sustainability over workforce agility in the Industry 5.0 context. As compared to Industry 4.0, which focuses on automation and artificial intelligence, Industry 5.0 focuses on cooperation between humans and advanced technologies. It is centered on the ways in which HR can improve the well-being, flexibility and competencies of employees in order to supplement the technological advancement.</p> <p>Methods</p> <p>Mixed-methods approach was used. In the quantitative stage, 150 HR employees were picked as the sample based on Cochran formula of unknown populations and convenience sampling. A questionnaire was used that was structured based on previous research and reliability and the validity was ensured before administering the questionnaire. Structural Equation Modeling (SEM) performed in AMOS was used to analyze data. In the case of the qualitative stage, nine HR managers were involved and their answers were processed with the help of NVivo software to extract the themes concerning the HR practices in Industry 5.0.</p> <p>Findings</p> <p>The findings indicate that human-centricity, resilience, and sustainability contribute a great deal to the agility of the workforce. Organizations can negotiate the changing challenges and take advantage of new opportunities in Industry 5.0 by incorporating their employees into decision-making, appreciating their individual capabilities, promoting flexibility and sustainability of work environments.</p> <p>Novelty</p> <p>The specific contribution of the paper to the debate on Industry 5.0 is the relationship of the human-centricity, resilience, and sustainability aspects of HR to the agility of workforce. Unlike the earlier studies that primarily placed more emphasis in the technology area of integration, the present study displays the human factor as one of the key facilitators of agility in the Industry 5.0 era.</p> <p>Implications</p> <p>The results provide to practitioners practical information on the way to develop HR strategies that will be in tandem with the beliefs of Industry 5.0. In organizations, the skill development and adaptability training as well as sustainable practices should take priority so as to create an agile workforce. The research contributes to the existing paucity of empirical research on HR in Industry 5.0 to the academic community by including a roadmap on how to conduct future research on the human-technological interface.</p>
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INTRODUCTION

Industry 5.0 is the so-called Human-Tech period- it is the next phase in industrialization development that will involve human ingenuity and new technological solutions (Xu et al., 2021). India has a prime location to be at the forefront of this industrial revolution because of the large population of skilled employees and the presence of advanced technological facilities (Elangovan, 2021). One of such steps in that direction is Industry 5.0, which is an attempt to have human workers collaborate with the artificial intelligence (AI), robotics and the Internet of Things (IoT) to achieve a new standard of productivity and creativity never heard of before (Leng et al., 2022). The specified paradigm is human-centered and targets human capacity in the balance with machine intelligence to simplify the processes and enhance the quality of life (Akundi et al., 2022).

Compared to the fourth industrial revolution, or Industry 4.0, which was focused primarily on IoT, AI, and big data analytics (Maddikunta et al., 2022), Industry 5.0 is also more about the human component of the production process and human-robot cooperation (Huang et al., 2022). Originally, the idea was presented to the Japanese government in 2018 as one of the ways of addressing the problems Industry 4.0 introduces, such as job displacement and human participation in the production process (Grabowska et al., 2022). Industry 5.0 boasts of a synthesized technological efficiency and human ingenuity and scrupulousness in the production system (Al Faruqi, 2019).

Such a human-machine cooperation makes it possible to create goods that are not only cost-effective and high-quality but also created in accordance with the needs and likes of a single individual (Adel, 2022). Moreover, sustainability and social responsibility are

mentioned in Industry 5.0 as it is concentrated on the decrease of waste, containment of carbon gases, and responsible working (Martynov et al., 2019). Industry 5.0 is a relatively new phenomenon, which however, offers us a picture of industrial activity in the future, a picture that is balanced in its attitude to technological innovation and human values and social issues.

India is strategically placed in developing Industry 5.0 due to the presence of many well-qualified personnel in terms of numbers of engineers, scientists and technical experts. The nation has achieved a lot in the information technology industry and is well placed to mobilize them to facilitate the Industry 5.0 (Elangovan, 2021). Some of the government projects like Make in India initiative are aimed at strengthening the manufacturing sector of the nation and transforming it to a global hub of quality and advanced production. In addition, the government is assisting the transformation of smart cities that will integrate the most recent technologies to improve the quality of life of citizens, in addition to enabling sustainable economic growth (Hein-Pensel et al., 2023).

The Indian startup ecosystem is equally contributing meaningfully to Industry 5.0 innovation. The majority of business individuals are addressing such technologies as AI, robotics, and IoT in order to make the manufacturing processes more efficient and productive with minimal expenses. These programs are attracting a large amount of investments both local and foreign, which indicates the possibility of growing the industry (Ivanov, 2023).

Based on this fact, the present paper explores the human resource (HR) of Industry 5.0 and its potential influence on the agility of the workforce. Specifically, it looks at the ways HR practices may be employed to introduce human-centricity by focusing on employees in decision-making and valuing their personal competencies and perspective. It also explains how HR can play a role in resilience of employees to accept change and address the difficulties in a rapidly changing Industry 5.0 environment. Finally, it demonstrates the necessity to be sustainable in the HR practices with the focus on how the organizations may help the employees and ensure their sustainable prosperity.

The research will be organized in the following manner: the first one will be the rationale of the research; the second one will be a review of literature that is available; the third will be the research methods; the fourth will be the results; and the final will be the conclusion and limitation of future research.

REVIEW OF LITERATURE

Literature analysis

The present study involved systematic literature review (SLR) approach where a critical review of available academic articles was conducted in line with the research questions being asked. Relevant articles that ensure the credibility and the scholarly rigor were located in peer-reviewed journals of high reputation. Each of the selected publications was reviewed and assessed with reference to quality, including methodological soundness, relevance, and contribution to the field in particular. Core databases such as Elsevier, Routledge, CRC Press- Taylor and Francis, Emerald Insight, Springer Nature and Sage were primary sources of literature. To increase the thoroughness of the review, more scholarly articles were downloaded on famous databases like Wiley, Academia, JSTOR, and Guilford Press. This multi-database treatment

was not only extending the scope of literature available but ensured that this paper had on board a spectrum of theoretical perspectives and empirical data, which reinforced the validity and credibility of the review findings.

Difference between Industry 4.0 and Industry 5.0

The major distinction between Industry 4.0 and Industry 5.0 is connectedness and self-direction achieved in industrial systems. The Industry 4.0 is worried about how to implement digital solutions and automation into the manufacturing process to stream and optimize the latter (George & George, 2023). Industry 5.0 on the other hand is more than automation because it involves direct interaction of humans and intelligent machines in highly networked systems.

The overall aim is to enhance the complementary human and robot capabilities and give rise to a symbiotic relationship that will yield more output and innovation (Verma et al., 2022). Unlike Industry 4.0, where automation often takes over the supply of human labor, Industry 5.0 is regarding human beings and robots working together and using their creativity, judgment, and flexibility to make the production processes more diverse (Raja Santhi and Muthuswamy, 2023). This collaboration results in greater flexibility and responsiveness as human workers are flexible enough and can make good decisions in a dynamic industrial setting (Rane, 2023). In addition, the adoption of better technologies, such as artificial intelligence (AI) and machine learning, is part of the human decision-making process, which leads to more accurate, efficient, and sustainable operations (Johri et al., 2021). Lastly, Industry 5.0 is also likely to offer a symbiotic bond between human intelligence and machine intelligence, thereby triggering the subsequent stage of the evolution of the industries (Narkhede et al., 2023).

There is also colossal change in the sphere of human resource (HR) practices as the transition to Industry 5.0. Automation in Industry 4.0 was the key factor that affected HR policies as it reduced the number of laborers with low or repeated skills (Demir et al., 2019; Rajumesh, 2023). Comparatively, Industry 5.0 puts the emphasis on the upskilling and reskilling programs, where workers will be able to operate in harmony with the sophisticated technologies but will not be lagging in the dynamic occupations (Zizic et al., 2022). This HR- strategy change not only makes the retention of the employees more efficient but also promotes the talent which is motivated by the opportunity to learn new things daily and to evolve professionally (Maddikunta et al., 2022). Thus, the role of HR is also central to the Industry 4.0 to Industry 5.0 switching process as it forms the workforce that would value and

capitalize on the benefits of new technologies (Hein-Pensel et al., 2023).

Human centricity, resilience and sustainability as core of Industry 5.0 HR

The centrality of the needs of humans, their resilience, and sustainability are the focus of Industry 5.0 in a central role in the future workplaces. To achieve this vision, human resource (HR) departments must focus on developing the following essential competencies: emotional intelligence, adaptability, and problem-solving that will allow employees to be able to work in the rapidly evolving environment and collaborate efficiently with technology and automation (Alves et al., 2023). Besides the skill base development, HR needs to work on sustainability initiatives, i.e. the incorporation of green projects and promotion of diversity and inclusion, in order to ensure that the workforce would be aligned to ethical, social, and environmental objectives of Industry 5.0 (Mahiri et al., 2023). In these ways, the HR will be in a position to produce a workforce not only adopted to the new technologies, but which values the well-being of both humans and environmental sustainability.

Within this paradigm, human-centricity becomes indispensable, as it positions people at the core of technological progress. The HRs play an important role in the creation of the culture of appreciating the personal skills and abilities of the individual and the possibilities of self- development and career improvement. The practices ensure that employees are more satisfied and productive and that the human potential optimisation is feasible in a more automated environment (Lu et al., 2022). By incorporating human centricity in the strategies of the

organization, the HR can establish a balanced relationship between the technological and human development.

The second crucial aspect is the cultivation of resilience that will enable employees and organizations to react in an appropriate way to Industry 5.0 challenges that continuously transform. The HR professionals ought to respond to the existing technological advances and automation by coming up with new strategies to help employees in the process. They may be reskilling/upskilling programs, emotional support systems, and creation of learning-oriented workplaces that support lifelong education (Modoni et al., 2023; Agote-Garrido et al., 2023). These policies sharpen the flexibility of employees that enables them to live in the conditions of technological shocks, but maintain a high degree of human orientation (Ghobakhloo et al., 2022).

Finally, there is the element of sustainability that is brought up as a critical element of HR practices in Industry 5.0. Since the issue of the ecological safety of technology innovation becomes an increasing concern, proactive implementation of eco-based values into the organizational culture, by the HR department, is required. By encouraging sustainable practices among the workers and implementing eco-friendly policies, HR will have the ability to enhance corporate responsibility and gain the reputation of an organization (Carayannis et al., 2023). Moreover, organizations can entice and keep skills that values environmental and societal accountability by incorporating sustainability in the management of the labor force thus forming an ecologically mindful and ethically driven sector (Villar et al., 2023).

Work force Agility

Workforce agility demands HR to make sure that employees have skills and knowledge so that they can adapt to the fast changing processes and technologies. This is possible

via continuous learning and development programmes, along with developing an organizational culture that is conducive towards creativity, experimentation, and innovation (Tessarini Junior and Saltorato, 2021; Franco and Landini, 2022). In addition, the HR must highlight the necessity of creating a diverse and inclusive workforce because studies indicate that diverse teams are better at producing creative solutions and solving complicated problems (Ajgaonkar et al., 2022).

It is also crucial that HR should concern itself with employee well-being and work-life balance, as these are crucial to the high performance of the Industry 5.0 environment, which is dynamic and demanding (Munteanu et al., 2020). Focusing on well-being allows organizations to keep workers interested, minimize burnout, and increase productivity in general.

Moreover, labor mobility is a major contribution to the evolution of sustainability in Industry

5.0. HR can assist employees to increase their competencies in renewable energy, waste reduction, sustainable practices, and make them more adaptable and resilient at work (Storme et al., 2020; Das et al., 2023). In addition to employee growth, HR may work with other departments to entrench sustainability in all the functions of the organization, such as procurement, production and waste management.

HR departments can also play a significant role in developing Industry 5.0 as a smarter, more human, and sustainable-friendly age by incorporating sustainability, innovation, and agility into the workforce strategies (Petermann and Zacher, 2022).

Research Gap

Research on Industry 5.0 remains limited, particularly within the domain of human resource management (HRM). Nevertheless, HRM departments must be made aware of how this new industrial paradigm will affect their employees. As the automation and intelligent technologies grow quickly, HRM should be able to adjust its strategies to guarantee successful cooperation between human workers and machines. It is also critical that it is necessary to predict the possible change in job positions, the different skills demanded, and the welfare of workers to be ready to face the challenges and opportunities of Industry 5.0. To fill this gap, the current research proposes the role of human-centricity, resilience, and sustainability in developing workforce agility in terms of Industry 5.0.

Research Objectives

The objectives of the study are to –

- To examine how human-centricity, resiliency, and sustainability affect agility of the workforce.

Rationale: The ability to be agile in the

Quantitative Methodology: HR Employees

Sample Size and Sampling Technique

workforce is becoming an important competency in the Industry 5.0 world, in which human-computer interaction requires swift adjustability. The research aims to reveal the process of organizational development through which companies can develop a workforce that is agile and prepared to operate in the future by analyzing the role of human-centricity, resilience of employees, and sustainable HR practices.

- To analyse the HR view of success factors leading to Industry 5.0.

Rationale: Industry 4.0 to Industry 5.0 needs the HR to redefine its strategic purpose by facilitating the process of continuous learning, innovation, and direction towards ethical and sustainable practices. Having the views of HR professionals on such success factors is imperative to find practical avenues of integrating Industry 5.0 principles into managing the workforce.

RESEARCH METHODS

Research Design

The current research paper was a mixed-method research (Bloomfield and Fisher, 2019), which employed a quantitative and qualitative approach to examine holistically how human-centricity, resilience, and sustainability are influencing agility of the workforce. Primary data were gathered amongst the HR employees and HR managers in the IT industry.

A final sample of 150 respondents at a 7.5 percent margin of error was calculated with the help of KrejcieMorgan table (Chaokromthong and Sintao, 2021). In order to compensate the non- responses, 150 questionnaires were sent out, and 109 valid responses were analyzed. The convenience sampling was used because it enabled fast and readily available data collection in the HR employees (Stratton, 2021).

Instrument Development and Validation

An effective questionnaire was prepared through adaptation of the items used in other research works and provision of pertinent demographic items. Domain experts reviewed the instrument to ascertain clarity, accuracy and content validity. Additional validation was done with Gaskins master validity table.

Qualitative Methodology: HR Managers

Research Approach and Participants

Besides the quantitative analysis, a qualitative research methodology was also utilized to understand it better (Vindrola-Padros and Johnson, 2020; Allan, 2020). The sampled participants were the HR managers in the IT industry who were chosen on the basis of their first hand experience in HR practices within Industry 5.0.

Data Collection

The semi-structured interviews were conducted on the basis of four focal questions:

- The human-centric approach and the role of HR.
- The concept of sustainability in HRM.
- The role of ethics in HR during Industry 5.0.
- R

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Findings verified the psychometric characteristics of the instrument: the average variance extracted (AVE) was over 0.50, Cronbach alpha and composite reliability (CR) were more than 0.70, and discriminant validity was supported because the square root of AVE was higher than those of inter-item correlations (Hair et al., 2020).

Data Collection and Analysis

An online survey was used as a data collection tool with Google forms, which provides an efficient data distribution and response. To identify the measurement model, quantitative data were analyzed by the SPSS with the help of exploratory factor analysis (EFA) and by the AMOS with the help of confirmatory factor analysis (CFA) (Hair et al., 2020).

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Analysis

Interview transcripts were transcribed exactly and analyzed in NVivo 14 program in a systematic way, which allowed applying thematic codes and finding patterns (Jackson, Bazeley, and Bazeley, 2019).

RESULTS AND DISCUSSION

Demographic profile of the HR Employee participants

Demographic variables are important to achieve accurate interpretation and analysis of the collected data. The given methodology helps a researcher to identify possible biases or differences in the perspectives, which depends on such variables as age, gender,

ethnicity, income, education level, and geographical distribution. By understanding the demographics of respondents in their

study, researchers are able to further increase the representativeness of their findings, as well as, make more informed conclusions.

Table 1 – Demographic Profile of the HR Employee

Demographic Profile of Respondents (N = 150)		
Gender		
Gender	Frequency	Percent
Female	70	46.70%
Male	80	53.30%
Total	150	100.00%
Age		
Age Group	Frequency	Percent
Less than 30	43	28.70%
30–40 years	70	46.70%
Above 40 years	34	22.70%
Total	150	100.00%
Qualification		
Qualification	Frequency	Percent
Post Graduate	106	70.70%
Undergraduate	44	29.30%
Total	150	100.00%
Marital Status		
Marital Status	Frequency	Percent
Married	99	66.00%
Other	8	5.30%
Single	43	28.70%
Total	150	100.00%
Experience		

Experience	Frequency	Percent
> 2 years	23	15.30%
2 – 5 years	33	22.00%
5 – 8 years	19	12.70%
Above 8 years	74	49.30%
Total	150	100.00%
Designation	Frequency	Percent
HR Employees / Executives	107	71.30%
HR Team Leads	43	28.70%
Total	150	100.00%

Table 1 shows the demographic profile of the HR personnel in the Study. The demographic profile of the respondents indicates an equal gender distribution with males (53.3) a little higher than females (46.7). Most of the participants are aged between 30-40 years (46.7%), less than 30 years (28.7%), and above 40 years (22.7%), which is why the sample is mostly representative of a young or mid-career workforce. Regarding qualification, the majority of the respondents are postgraduates (70.7%), which indicates having a highly educated workforce. In terms of marital status, almost two-thirds are married (66.0%), and 28.7% single. In terms of experience, nearly half of the interviewees (49.3) possess more than 8 years of professional experience, which means that the sample is not very new, and only 15.3% of the interviewees mentioned having less than 2 years of experience. Lastly, most of the respondents work as HR employees/executives (71.3%), and the rest (28.7) as the leaders of the HR team, so both operational and supervisory HR work is represented. In general, the demographics signify a highly qualified, highly experienced, and diversified HR workforce, which is appropriate to study the research objectives on Industry 5.0.

Item analysis for human centricity,

resilience and sustainability on the workforce agility

The mean scores above 4.00 indicated that the HR Employees have strong agreement to Human centricity (M = 4.12, SD = 0.876) , Resilience (M = 4.07, SD = 1.100) and sustainability (M = 4.21, SD = 0.765). The standard deviation for all statements of human centricity, resilience and sustainability is below 1.000, indicating a small variation in the opinions of HR employees. The skewness and kurtosis are well within the established threshold of -3.00 and +3.00, indicating a normal distribution of data.

H1 - There is a significant impact of human centricity, resilience and sustainability on the workforce agility

Exploratory Factor analysis

Sampling adequacy as measured by KaiserMeyerOlkin (KMO) was determined to be 0.774, which implies that the data set was appropriate to factor analysis. Moreover, Bartlett Test of Sphericity produced a chi-square value of 1530.178 that had 190 degrees of freedom with a significance value of $p < 0.05$, which confirmed that the correlation matrix was not an identity one and, thus, factorable.

The mean values of the communalities among all factors regarding the success factors of the Industry 5.0, that is, human centricity, resilience and sustainability, were observed as

0.422- 0.861, which indeed was sufficiently high to confirm the sufficiency of the items retained during the analysis.

The Rotated Sums of Squared Loadings confirmed that the extracted factors explained 66.471% of total variance, which is above the generally determined 50% mark of social science study, thus, demonstrating a strong model fit. The analysis also affirmed the formation of three different elements, namely human centricity, resilience, and sustainability, which can be placed within the theoretical framework of Industry 5.0 and prove the underlying framework of the measurement model.

Model reliability and validity

Table 2 - Reliability and validity statistics – Determinants of success factors of Industry 5.0

	CR	AVE	MSV	MaxR(H)	HC	RS	SUS
HC	0.930	0.769	0.903	0.937	0.877		
RS	0.820	0.503	0.082	0.887	0.149	0.634	
SUS	0.955	0.632	0.958	0.940	0.887	0.432	0.764

Table 4 presents the results of convergent and discriminant validity testing. The constructs reliability and convergent validity were established because the Composite Reliability (CR) values were greater than the accepted criterion (0.70), and Human Centricity (HC = 0.930), Resilience (RS = 0.820), and Sustainability (SUS = 0.955) showed a high level of internal consistency. In the same manner, the values of Average Variance Extracted (AVE) of all the constructs were over the satisfactory value of 0.50, with HC = 0.769, RS = 0.503, and SUS = 0.632 showing good convergent validity.

There are also findings that the Maximum Shared Variance (MSV) values were less than AVE values and Maximum Reliability (MaxR[H]) values were higher than the MSV across constructs, which also supports the measurement model. In order to determine the

discriminant validity, the FornellLarcker criterion was used (Afthanorhan et al., 2021). The values of square root of AVE, which are diagonally expressed in the correlation matrix, were higher than the inter-construct correlations, which validated the fact that each construct is independent of the other.

All in all, these findings are good evidence of construct reliability, convergent and discriminant validity of the three identified constructs which include human centricity,

resilience, and sustainability applied in the study.

Table 3 - Measurement Model – Impact of success factors of Industry 5.0 on workforce agility

Model Fit Summary				
CMIN				
Model	NPAR	CMIN	Degrees of Freedom	CMIN/DF (χ^2/df)
Default model	119	212.997	123	2.876
Criteria				<3.000
RMR, GFI				
Model	RMR	GFI	AGFI	PGFI
Default model	0.048	0.826		
Criteria	<0.100	>0.80		

Table 3 shows the measurement model fit indices to determine the effect of the success factors of Industry 5.0 on the agility of workforce. The value of chi-square/df (2.876/df) was considerably less than the desirable level of <3.0, which implies that the level of parsimony of the model is satisfactory. Goodness of Fit Index (GFI) was reported at 0.826, which is higher than the suggested cut off of 0.80 hence showing an acceptable model fit. Equally, the value of the Root Mean Square Residual (RMR) is 0.048, which is less than the acceptable maximum 0.10 indicating a small residual error in the

model.

In general, all these indicators attest that the measurement model shows a sufficient and valid fit to the data. The findings correspond to the existing standards of the social science study, which proves the structural validity of the model and contributes to the further development of the argument according to the human centricity, resilience and sustainability as predictors of workforce agility.

Table 4 – Structural Model – Impact of success factors of Industry 5.0 on workforce

			Unstd Estimate	Std Estimate	P values
Workforce_Agility	<---	Human centricity	0.234	0.084	***
Workforce_Agility	<---	Sustainability	0.322	0.108	***
Workforce_Agility	<---	Resilience	0.452	0.121	0.016

The average scores of Human centricity will increase by one unit, which will increase the workforce agility by twenty three folds. The

strength of the correlation indicates that it is

possible to make a business more agile in its workforce to a certain extent by ensuring a stronger emphasis is given to human centricity in business. By putting priority on the needs and welfare of the employees companies can also enhance the flexibility and responsiveness of its staff. This enables them to be able to answer quickly to the market and the demand of clients. In addition, this flexibility in labor might in the long run result in increased productivity and innovation as well as organizational success.

The 32-fold improvement in workforce agility will occur due to an increase in the mean scores of Sustainability by one unit. The finding reveals that a sustainable approach to company can have a great contribution to the flexibility and adaptability of the workforce. By applying sustainable activities and values to the corporate culture, the companies may establish an environment that promotes the well-being of the employees, their interest and their willingness to remain. This also allows staff to become more fluid and versatile in their jobs that leads to heightened agility and reactivation. In the end, those businesses that prioritize sustainability will enjoy the fruits of a highly adaptable workforce that translates to high productivity, innovation and, lastly, long-term prosperity.

A unit change in the average resilience scores will translate into 45-fold agility of the workers. This brings out the extreme level of impact that resilience has on the elasticity of the workforce. The capability to develop resilience among employees will assist the organizations to develop greater capacity to withstand issues and overcome failures. This again is able to make the staff fit very well into the prevailing situation in the shortest time possible, make valid decisions and initiatives and ultimately spearhead organizational success. Thus, the investment into the activities that encourage resilience can result in significant payoffs in the way of flexibility in the staff and overall productivity.

The findings indicate that workforce became adaptive due to human centricity, resilience and sustainability. The reason is that when firms take into account human centricity, they will have a workplace where they value the well being of their employees and support them. This will further translate to high employee engagement and productivity, since the employees feel appreciated and will be willing to give their best at their work. The contemporary business environment that is dynamic and evolves constantly also encompasses the critical aspect of resilience. Strength of character can adjust to the difficult circumstances effectively and resist failure in such a way that the strong characters can find their way easily through the unexpected situations. Lastly, the sustainability initiatives will bring prosperity and growth over time since they will aim at maximizing the utilization of available resources and minimizing the waste. Not only does it have positive connotations to the environment but also guarantees a robust and safe future of the labor force.

Demographic profile of the HR Managers participants

The national trends show that women only represent 26 percent of the Indian workforce (Economic Times, March 8, 2022). In a similar trend, it is found in the current research that

75.7 percent of the HR managers in the IT industry are men and just 24.3 percent of them are women indicating that there is still the disparity between gender in the position of managing the company. The respondents are mostly young with majority having a range of 24 -35 years

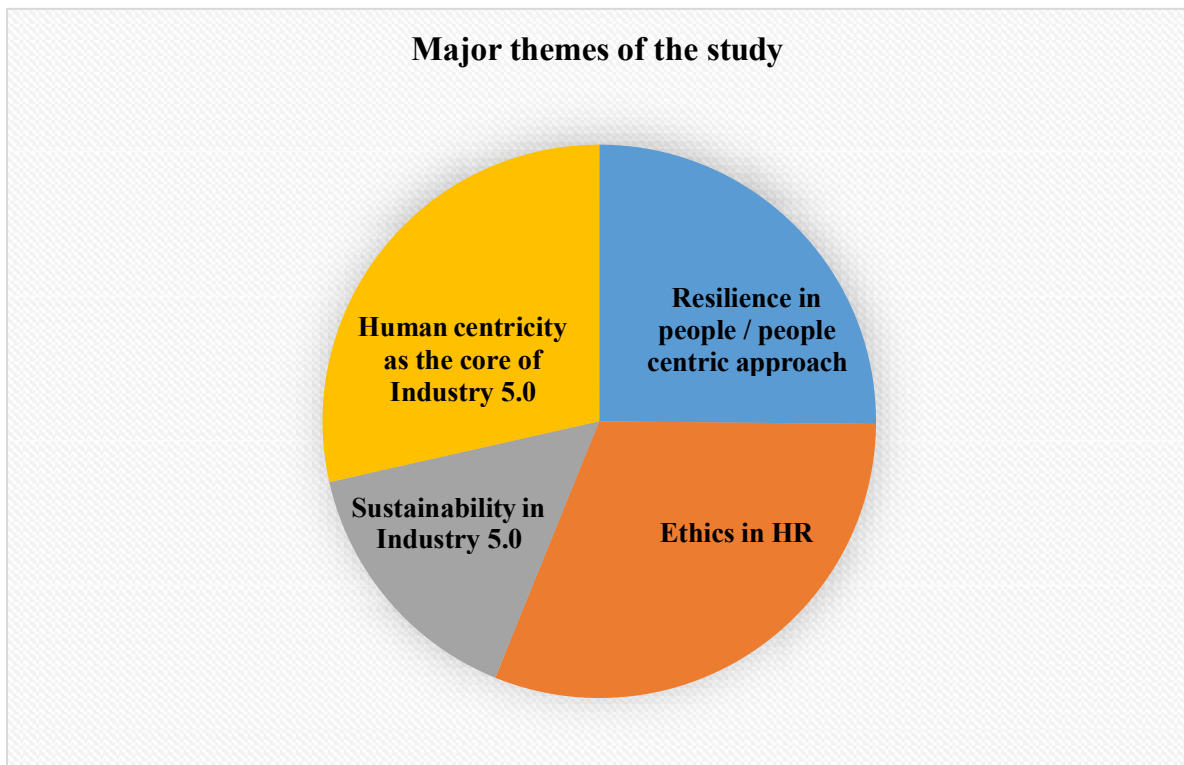
(58%), then 36-45 years (25.1%), and above 45 years (16.9), hence showing a largely youthful to middle-aged managerial workforce. Education level also dictates a well-qualified sample where 60.8 and 20.6 percent of HR managers have postgraduate and professional course qualifications respectively. Concerning work experience, 23.9 percent of managers have 5-7 years of experience, 21.4 percent have 8-10 years, and 26.1 percent have over 13 years of experience in their present

organization. Experience in the industry-wide reflects a similar trend with 20.4% having the 8-10 years and 29.6% having more than 13 years of professional experience in the IT sector. All in all, the results indicate that IT sector HR managers constitute a rather well-educated and male-dominated and professional population that is well-positioned to respond to the challenges and opportunities that Industry 5.0 offers.

Identifying themes

Using the Nvivo software the following themes were identified from the 9 interviews conducted during the research period. The 9 Interviews included HR managers from 9 renowned IT companies in Bangalore city

Figure -1 Major themes identified from the interviews



The above themes were identified and the codes and sub codes for the study are presented as follows

Table -1 Themes and Sub themes identified from the interviews using Nvivo

Name	Description	Files	Ref
		9	326

Name	Description	Files	Ref
Human centricity as the core of Industry 5.0	Moving towards prioritising Human is the core of the business	9	82
Positive attitude	HR departments are actively championing the importance of prioritizing human well-being and satisfaction within the context of the emerging Industry 5.0 paradigm	8	25
Process of Integrating human centricity	Delve into specific tactics and techniques that HR professionals can employ to ensure that employees remain at the centre of decision- making processes and technological advancements	6	25
Role of HR Managers	Need to embrace this change, focusing on nurturing a collaborative environment, upskilling employees, and addressing potential challenges such as job displacement.	7	32
Name	Description	Files	Ref
Ethics in HR	Considering Ethical practices right from recruiting to retaining employees	9	101
To a great extent	With the rise of automation and artificial intelligence, HR professionals must prioritize ethical decision-making to ensure fair treatment of both human and digital workers.	7	26
To a moderate extent	Industry 5.0 requires HR managers to navigate the ethical dilemmas surrounding data privacy, employee monitoring, and algorithmic bias, while also promoting diversity, inclusion, and employee well-being in this new era of work.	6	22
No extent	There are no policies for Ethical HR	3	16

Other Advantages of ethical HR	By upholding ethical standards, HR professionals can create a harmonious and sustainable workplace that embraces the benefits of technology while safeguarding human rights and values.	9	37
Name	Description	Files	Ref
Sustainability in HR	Readiness of the it Industry for sustainable HR	9	50
Not future ready	No strategies and policies are framed for future needs of the employees in IT industry	2	6
Moderate emphasis on future uncertainties	Some kind of policies and practices are framed to be implemented in the near future which will lead to sustainability	7	18
Ready to face the future	Adopting sustainable practices throughout the entire employee lifecycle, from recruitment and training to performance management and employee well-being	7	26
Name	Description	Files	Ref
Resilience / People centric approach	Management philosophy that prioritizes the needs and well-being of employees in the workplace.	9	93
Upskilling and reskilling employees	To adapt to the changing demands of the IT industry 5.0 landscape.	8	33
Training programs	To enhance digital skills, health and safety protocols, and customer service	9	32
Employee well-being	By placing people at the center, organizations can ensure that employees are equipped with the necessary skills and support to adapt to the changing work environment, fostering a harmonious relationship between humans and machines.	8	28

The findings indicate that the HR managers of IT Sector have taken an interest in the name of the research study significantly. The theme 1 - Human centricity as the core of Industry 5.0 was found in 9 files having a reference of 82 where the sub node TRole of HR Managers resulted in the highest reference of 32. The second theme discovered was ethics in HR and was present in 9 files with 101 reference indicating the most discussion of this topic. The sub node, Other Advantages of ethical HR had the most references 37 and were accessed in 9 files. Theme 3 - Sustainability in HR was referenced only in 50 references and 9 files. Theme 4 - Resilience / People centric approach featured 93 reference and three sub nodes that comprised Upskilling and reskilling employees, Training programs and Employee well-being.

Discussion

Theme -1 The initial theme was the Human centricity as the bedrock of Industry 5.0 that demonstrated that the HR departments are fiercely advocating the significance of putting a greater emphasis on human well-being and happiness in the growing Industry 5.0 paradigm. This change of interest has prompted the introduction of different employee-oriented policies, including flexible working schedules, health and wellbeing and development opportunities. The HR departments are learning that to reap the maximum out of the opportunities of the modern technology and automation, the employees of the company must be in the position of feeling appreciated and championed in their work. With the central goal of Industry 5.0 being the human centric approach, the companies not only increase the productivity and satisfaction rates among their employees, but also build a favorable working atmosphere fostering innovation and success in the long-term. Learn specific actions and strategies that human resource practitioners can implement to make sure that employees

are the primary concern in decision-making and technological change in the working environment. Among the strategies that can be effective is to periodically give feedback and input opportunities to the employees in order to enable them to take an active part in the decision making process of the direction of the organization. Also, the HR professionals have the opportunity to introduce training programs that would assist in building proficiency and confidence of the employees at the workplace by telling them what skills they need to develop to guarantee them survival in the new technology and automation. In addition, employers can induce a favorable working environment by rewarding and appreciating employees, which will generate a sense of worth and appreciation. By focusing on the implementation of strategies that prioritize needs and well-being of people, human resources managers can indirectly make sure that employees are actively engaged and motivated in a constantly changing world of technologies. This change must be fully accommodated and adopted in a way that a significant focus must be on the creation of a teamwork environment, employee development and handling of possible challenges that may arise including job loss. This is achievable by fostering collaboration amongst the staff in an organization to increase knowledge and skills sharing and this translates to improved innovation and productivity. In addition, through training and development, the employees will be empowered to comfortably handle the new technology and also be in a competitive position. There should also be provision of career transition assistance and retraining as a means of dealing with the possible problems like displacement of jobs. This will enable employees to possess the highly required skills to survive in the dynamic employment market.

Theme -2 The second theme was the incorporation of ethics in the entire procedure

of the staffing and retaining staff. Given the modern tendencies of artificial intelligence and automation, the moral decision-making must be given the utmost importance in the HR profession so that human or digital workers could be treated equally. This entails conducting a fair recruitment exercise and being just to the applicants. Also, HR practitioners should consider ethical implications of using AI in the assessment of employees and their improvement accordingly. Organizational culture of openness, trust and inclusivity can be established by the ethical practices embraced throughout all stages of the employee lifecycle. This in turn is capable of resulting in employee satisfaction and retention. Ethical problems concerning data privacy, employee spying, and bias in the algorithms are to be addressed by the HR manager of the Industry 5.0. They must also promote diversity, inclusiveness and active participation of the employees well being in order to fit the new circumstances of work. In order to successfully address such ethical concerns, the HR professionals should take into account placing emphasis on developing holistic policies and procedures that govern ethical application of artificial intelligence in performance appraisals and developments. It would involve making algorithms in a manner that is fair and unbiased as well as keeping the AI systems under constant testing and scrutiny in order to detect any possible bias or privacy

intrusion and keeping employees informed and consistently educated about the use and constraints of AI in the workplace. The following steps can help the HR managers to make sure that the use of AI is part of the process of improving employee satisfaction and corporate performance rather than causing discrimination and exploitation to the staff. Adhering to the moral values, the HR specialists are able to build a peaceful and sustainable workplace environment which may have all the advantages of technology without

endangering the human rights and values. In addition, HR managers are recommended to develop transparency and responsibility when it comes to the implementation of AI technologies. Publication of the information on the algorithms and data on which the decision was taken is one way of ensuring transparency. Furthermore, the evaluation should be conducted periodically so that the AI systems could be not only efficient but also deprived of any prejudices and unfairness. The fears can also be overcome by creating a culture of trust and open communication between workers and the artificial intelligence systems to make people trust the technology. In effect, HR professionals will be able to create a working environment in which the AI technology will be utilized successfully without undermining the standards of ethics, thus, making sure that the principles of human dignity and equality will not be violated.

Theme 3 - The third theme was dedicated to the concept of sustainability regarding human resources. Practices that are sustainable in all the lifecycle stages of employees (recruitment, training, performance management and employee well-being) are required in order to ensure that firms succeed in the long-term. Their ability to offer the workplace not only a guarantee of fairness and inclusion but, with the help of eco-friendly recruitment methods, such as the active promotion of diversity and inclusion, encourage innovation and creativity. Promoting emphasis on lifelong learning and skill development by targeting training and development programs not only to enhance the well being of the employees but also to enhance flexibility and growth of the organization in a dynamic business environment in general. In addition, performance management systems with the emphasis on continuous feedback and employee engagement foster the atmosphere of transparency and accountability and lead to greater output and job satisfaction. Lastly, when the well being of the employees is put on the first line, by providing them with health

and wellness programs, work life balance programs and flexibility in scheduling work schedules besides enhancement of employee morale, not only is this found to reduce the turnover, but also is found to enhance performance of the organization at large.

Theme 4- The 4th theme focused on how human based Industry 5.0 was. With the emphasis on people, companies have the ability to make sure that workers possess the right skills and assistance to adjust to the evolving working environment to make human-machines interaction positive. This school of thought acknowledges that machines and robots can significantly enhance efficiency and production but they cannot substitute the inimitable problem solving and creativity, as can be found in human beings. By putting personal emphasis, the company leaders can develop a work culture directed at personal development and growth. With such a strategy, employees can be allowed to employ their individual skills and perceptions, thereby making them contribute meaningfully. The primary objective of Industry 5.0 is the establishment of a humanistic workplace, which will allow the coherence and interaction between man and robot. It is a concept of human-machine synergy in applying their individual strengths to be creative and more effective.

CONCLUSION

The present study has reached its goal through the quantitative and qualitative analysis. The quantitative analysis served the purpose of quantifying the opinion of the HR personnel with regard to the agility of the workforce through the Industry 5.0 components, which are human centricity, resilience, and sustainability. The HR staff mentioned that the success features of the Industry 5.0 affect little the agility of the workforce. It is suggested that the HR department of the IT industry is advised to focus on the implementation of the

approaches that would contribute to the agility of the workforce by means of fostering human centricity, resiliency, and sustainability. This may be in form of offering training and development opportunities that emphasize on the well being and flexibility of the employees, a culture that facilitates creativity and continual learning and sustainable practices that enhance a balanced work life balance. These problems may be addressed with the support of the HR department so that they could manage to ultimately deal with the challenges presented by the Industry 5.0 and ensure that their firm will thrive and grow in the long-term. The HR Managers are also strongly committed to upholding such qualities in order to achieve and foster people oriented enterprises. They are aware that they can establish a friendly work environment by investing in health and adaptability of their workers, which will enhance creativity and learning processes. Moreover, by enforcing environmentally friendly operations and establishing a healthy balance between professional and personal life, they will be able to successfully recruit and retain excellent individuals, thus, playing an important role in ensuring the long-term success and development of the organization. On the whole, the HR department is important in the development of a flexible and highly competent workforce capable of successfully managing the Industry 5.0, which is rapidly evolving and emerging.

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