

Artificial Intelligence Systems in Managing Human Resources: An Exploratory Study in the Indian Context

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Submitted: 04/02/2024 Revised: 12/03/2024 Accepted: 18/03/2024

Abstract: This paper is an attempt to examine the factors affecting the use of Artificial Intelligence (AI) by human resource professionals with their 'professional experience (in years)' as a moderating variable. A survey research conducted on a sample of 123 senior human resource professionals. The key findings reveal that the use of AI would lead to a lack of employee productivity, morale and trust. It further illustrates that AI would have adverse consequences on growing employee silence and data manipulations. HR practitioners in India are differing in adopting AI is not because of their fear of losing their jobs but because of the sheer nature of unpredictable outcomes and lack of strong legislations on using AI. This study answers the question of why there is not a widespread use of artificial intelligence systems in India for managing human resources even though AI is being used for other domains of management.

Keywords: Artificial Intelligence; Employee Silence; Data Security; Employee Morale; Human Resource Management; Employee Productivity.

1. Introduction

Artificial Intelligent systems are digital systems that not merely automate tasks and processes but also replicate human behaviour (Scherer, M. U. (2015), DeCanio, S. J. (2016), Ghosh, S., & Kumaraswamy, M. (2002)). They are specially designed systems which can decipher patterns in data and then try to replicate responses as per the historical data. Sophisticated Artificial Intelligent systems have found applications in self-driven cars, complex medical surgeries demanding high precision, geographical charting using drones and even remote warfare. (Złotowski, J., Yogeewaran, K., & Bartneck, C. (2017)) Still more sophisticated systems can even predict a possible terrorist attack (Frank, L., & Hohimer, R. E. (2011)) through facial recognition of the user and sentiment analysis. While on one hand there is no second opinion about the myriad benefits of this supreme technology but the sheer un-regulated and un-predictable nature of its outcomes is worrisome. (Złotowski, J., Yogeewaran, K., & Bartneck, C. (2017)).

This paper aims to highlight and delve deeper into the impact associated with using artificial intelligent systems for human resource management and the

concerns which are holding back Human Resource Management (HRM) practitioners from implementing this. A number of research papers and books of this subject have highlighted certain issues which could manifest as a result of using this technology for managing human beings (Helbing D. (2019)). A systematic literature review indicated the following areas of concern:

- Employee trust
- Employee Silence
- Use of Artificial Intelligence in non-operational HR tasks,
- Loss of jobs for HR professionals
- Risk of manipulations and erroneous results
- Loss of productivity
- Lack of a strong system of legislations

In view of the above gaps it was decided to conduct a survey research in the Indian context to find out if these areas of concern did hold back practitioners from choosing to adopt Artificial Intelligent systems in managing their Human Resources or were the real reasons different from the ones cited above.

2. Review of Literature

A systematic literature review was done from pertinent research papers in the SCOPUS and EBSCO Discovery Databases. Keywords used were: 'Artificial Intelligence in Human Resource Management'. Apart from this certain books and reports from credible government sources and market research agencies were also consulted

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which have been mentioned in the references. The history of Artificial Intelligence (S J Russel, P Norvig, 2016) can be traced from 1726 when Jonathan Swift published the book 'Gulliver's Travels' wherein he mentioned the 'Engine' which according to him was a machine which could help an ordinary person with limited knowledge to write books in philosophy, poetry, law and mathematics with a reasonable charge. Swift imagined this machine to be a simulator much of the likes of a chat bot we have today. Something which could automate, learn and work for others with mechanical efficiency and at a cost (Scherer, M. U. (2015)). Thereon, technology has continuously matured from ideation to reality and took a swift turn in July, 2012 when self-learning machines (artificial intelligent machines) were being tested for virtual image detection based on some 10 million unlabeled images from youtube (Le,Q,V, May, 2013). This is a pivotal development in the field with an error rate of less than 16% as on December, 2016. With this human resources are being analyzed for their sentiments – profiling their engagement or disengagement behaviours (Swailles, S. (2016)), leadership behaviours and potential attrition risks (Brougham, D., & Haar, J. (2018), Yampolskiy, R. V. (2013), Ajit, P. (2016), Sexton, R. S., McMurtrey, S., Michalopoulos, J. O., & Smith, A. M. (2005)). Artificial Intelligence is increasingly being used for recruitment (Furtmueller, E., Wilderom, C., & Tate, M. (2011)), training and development and retention of employees. (Iqbal, F. M. (2018), Stoneking, M. D., & Curet, O. L. (2014), Sexton, R. S., McMurtrey, S., Michalopoulos, J. O., & Smith, A. M. (2005)) Machine learning has enabled artificial intelligent systems to map perception and cognition (two essential skills for any type of human work). (Brynjolfsson, E., Rock, D., & Syverson, C. (2018), Roco, M.C. and Bainbridge, W.S., (2003), Sikaroudi, E., Mohammad, A., Ghousi, R., & Sikaroudi, A. (2015)). This leads us to the first hypothesis:

H1: Artificial Intelligence can be used in non-operational HR Tasks like Performance reviews, Retention, Engagement.

Recently, it has been established that there has been a considerable slowdown in productivity since the past decade (Brynjolfsson, E., Rock, D., & Syverson, C. (2018), Pradhan, R. K., & Jena, L. K. (2017)); more so after the introduction of Artificial Intelligent systems and this has come to light as a paradox to a technology which was initially thought as a productivity booster (Yampolskiy, R. V. (2013), Heygate, R. (1994)). The aggregate productivity growth in the United States (which is an ardent user of Artificial Intelligence) has slowed down since 2000 and has stagnated in the past year. What

could possibly be the reasons for this paradox? With this we frame our second hypothesis:

H2: Use of Artificial Intelligence would have a severe impact on employee productivity.

One possible reason could be that these systems (though highly sophisticated with minimal error rates) are still not savvy enough to make complex decisions related to job evaluation systems which have a psychological impact as well as an impact on performance. (Lawler, J. J., & Elliot, R. (1996), Stoneking, M. D., & Curet, O. L. (2014)) The efficiency and correctness of these algorithms are yet to be ascertained in all possible cases. (Pang, B., & Lee, L. (2008), Huber (1990)) stated that these systems of machine learning help skilled experts in accurate decision making with savings on time but only for semi-structured or structured problems. This however, is not empirically verified in case of completely unstructured problems. The aforementioned discussion helps to frame the third hypothesis:

H3: Artificial intelligence poses a risk of manipulations and erroneous results.

Structure as such is another problem of Artificial Intelligence when it comes to legally operationalizing it. Artificial Intelligence could operate in ways which might not be under the control of those who initially were legally liable for it (Gurkaynak, G., Yilmaz, I., & Haksever, G. (2016)). This is the biggest challenge of legalizing and controlling the use of this giant. (Scherer, M. U. 2015, Etzioni, A. and Etzioni, O., 2017, Khan, S. N., Nicho, M., Takruri, H., Maamar, Z., & Kamoun, F. (2019)). Therefore the sheer unforeseeable nature (Veruggio G., Operto F. (2008)) of this technology could also be a deterrent for not so technologically savvy people adopting it. 'In addition, autonomy affects blame and credit attributed to a robot and its human interaction partners'. (Zlotowski, J., Yogeewaran, K., & Bartneck, C. (2017)). Therefore, we hypothesize the following:

H4: Artificial intelligence can cause more harm than gain in future if not optimized and legally regulated.

While it is a no brainer that Artificial Intelligent systems have eased out a lot of tasks for HR professionals but those who have been using it in virtual business environments are still skeptical of its utility for example in training needs identification, employee engagement statistics etc. Managers have often noticed that this has led to instead burdening of the line managers with incomprehensible HR data. (Snell, S. A., Stueber, D., & Lepak, D. P. (2002)) Thus, it was found that no matter how sophisticated the machine learning systems might become, organizations certainly cannot do away with hiring Human Resource Professionals. While at the same time Frey, C. B., & Osborne, M. A. (2017) in their

research suggest that about 47% of the total US skilled jobs market is at risk with increased computerization and use of Artificial Intelligence systems. At the same time there are efficient systems with far more superior algorithms which can perform the task of selecting individuals for making hiring decisions in the context of relational stability of the team. (Malinowski, J., Weitzel, T., & Keim, T. (2008)) They map the technical and behavioural attributes of the new hire with that of the team and then recommend whether the person is a fit or not. Hence, we posit our fifth hypothesis:

H5: Artificial intelligence can become an existential threat to human resource professionals.

Artificial intelligent machines mean systems which can decide on their own when to follow or when to disregard human directions. Such systems may also mean that they are capable of autonomous decision making and not just serve as decision aids (Spector, P. E. (2005)). Therefore, they may be perceived as more threatening to human safety, well-being, resources (i.e. realistic threat) and also to human uniqueness and distinctiveness (i.e. identity threat). (Zlotowski, J., Yogeewaran, K., & Bartneck, C. (2017). When human wellbeing and existence is affected by un-predictable factors in the environment it leads of the fear of unknown leading to a morbid silence (Cambria E., Schuller, B., Xia, Y., & Havasi, C. (2013)). Artificial intelligence is also being used to study to employee sentiment and behaviour analysis at work (Coeckelbergh, M. (2011), Makridakis, S. (2017)) which definitely gives a heads up in terms of curbing attrition and disengagement but another fallout is the growing sense of being under the scanner at all times. (Anandarajan, M. (2002), Oz, E., Glass, R., & Behling, R. (1999)) Artificial intelligent systems to track and monitor employee

behaviour at work also implies dehumanizing people at work (De Stefano, V. (2018)) which means that this continuous monitoring would make employees restrict their right to free speech and also place restrictions on their usage of language in certain contexts. Continuous monitoring of employee activity at work place would lead to a perceived sense of injustice and can actually increase the occurrence of detrimental organizational behaviours. (Posey, C., Bennett, B., Roberts, T., & Lowry, P. (2011)) Thus, based on the above we hypothesize the following:

H6: Artificial Intelligent systems would increase employee silence

H7: Artificial Intelligent systems would lead to a lack of trust among employees.

3. Materials and Methods

A self-constructed questionnaire was used to collect data from respondents who were both HR practitioners and decision makers and came with an educational qualification in HRM. This was done for a total of 123 different organizations in India. The questionnaire was initially mailed to 240 respondents out of which 128 responses were received. On checking the completeness of data, the sample was further reduced to 123.

Establishing the Reliability: A test re-test was done on a sample of first 30 respondents and the alpha was measured to be 0.73

Establishing the Validity: The Cronbach Alpha test of measuring the validity was conducted on the sample and the alpha coefficient was measured to be 0.7232. Therefore, it was concluded that the questionnaire was both reliable and valid. A 4 point Likert scale was used to eliminate the central tendency bias:

Very Likely	Likely	Not Likely	Never
4	3	2	1

Sample Distribution:

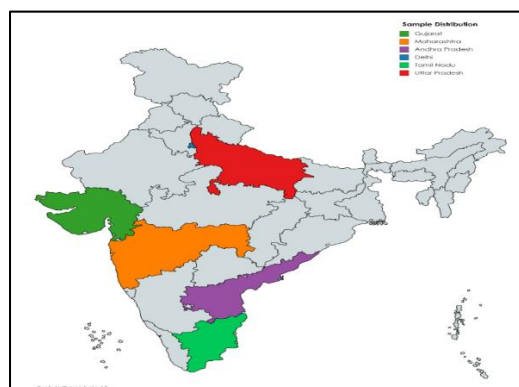


Fig. 1. Sample distribution
(map source: census 2011)

The sample was collected randomly from the states of Gujarat, Maharashtra, Andhra Pradesh, Delhi, Tamil Nadu and Uttar Pradesh (colour coded above) in India to get a good representation of the population. These states also happen to be the most literate and most populous and together house more than 75% of the working population of the country.

4. Findings and Discussion

The self-constructed questionnaire measured seven parameters. (Table 1). Since the no. of years of post-qualification experience was the only continuous variable apart from the seven major parameters in our questionnaire we checked for its normality and found the below results:

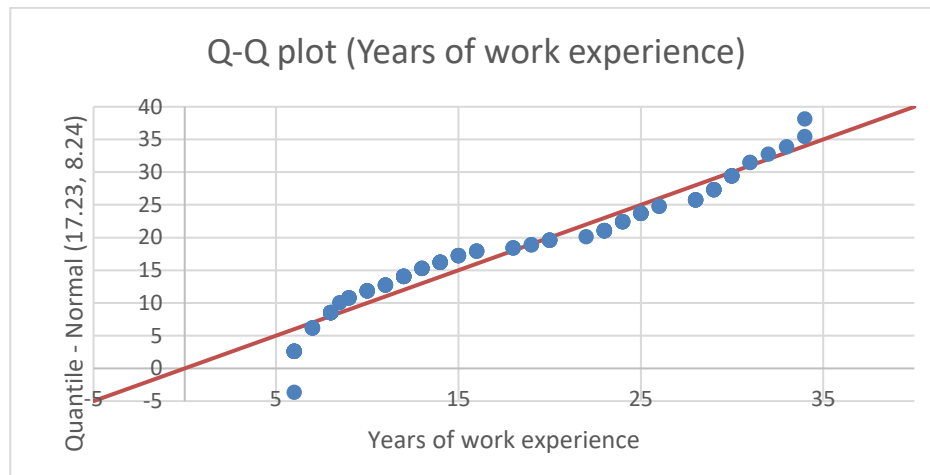


Fig. 2. Q Plot

It can be inferred from the graph above that the variable 'years of work experience', though a little curvy follows

a normal distribution in the population from which the sample is extracted following the central limit theorem.

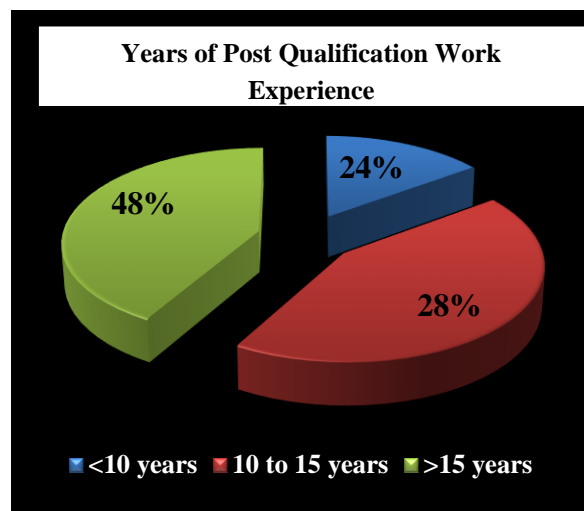


Fig. 3. Distribution of work experience

Figure 3 shows the sample distribution with reference to the no. of years of post-qualification work experience. It follows that majority of 48% of the sample population carried a work experience >15 years while 28% were

those whose work experience was in the range of 10 to 15 years and 24% of the sample had less than 10 years of post-qualification work experience.

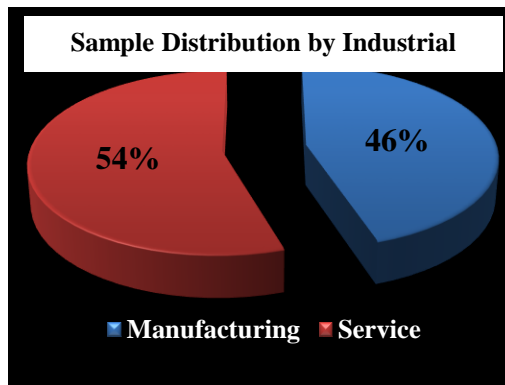


Fig. 4. Sample distribution by sector

A bivariate frequency distribution of the seven variables identified above gave the following results:

Figure 4 shows that the sample population is fairly representative among the service and manufacturing sectors.

Table 1. Questionnaire and result

Q. No	Question Description	Parameter	Result
1.	Do you think Artificial Intelligence can be used in non-operational HR Tasks like Performance reviews, Retention, Engagement etc?	Use of AI in non-operational HR tasks	68% strongly agree that AI can be used for non-operational HR tasks
2.	Artificial Intelligence systems use and track employee data on social networks too. Would this lead to lack of trust among employees?	Employee trust	34% say it is very likely while 36% say it is likely and 30% say it would never happen. Overall, 70% say use of AI would lead to lack of employee trust.
3.	Use of artificial intelligence systems would make employees feel threatened and monitored all the time	Employee Silence	31% say it is very likely and 36% say it is likely while a total of 33% say it would never happen. Overall, 67% say that use of AI would lead to greater employee silence.
4.	Artificial Intelligence allows machines to learn from and behave like humans. Do you think Robots can become an existential threat to HRM professionals?	Loss of jobs for HR professionals	69% of the sample says Artificial Intelligence can never become a threat to HR professionals, 26% say it is very likely and 5% say it likely.
5.	Do you think employees could manipulate perceptions about themselves by sharing posts on social and company networks if artificial intelligence is used for sentiment analysis?	Risk of manipulations and erroneous results	42% sample strongly agrees that Artificial Intelligence can lead to manipulations and erroneous results while 35% say it can never happen and 23% feel it is likely.
6.	Do you think artificial intelligence can cause more harm than gain in future if not optimized and legally regulated?	Lack of a strong system of legislations	9% people feel strongly that artificial intelligence is not being used in managing human resources because there is a lack of legal regulations while 59%

			feel it is likely and 20% feel not likely while 12% say it can never be a cause.
7.	Do you think data leaks (a probable threat of using artificial intelligent systems) would bring serious damage to employee confidentiality, morale and productivity?	Loss of Productivity	61% respondents strongly affirm (very likely) that use of Artificial Intelligence can lead to a loss of productivity while only 18% feel it can never happen. 21% say that it is likely.

Table 2: AI in non-operational HR tasks

Years of Work Experience	Sector	Never	Not Likely	Likely	Very Likely	Total
<10 years	Manufacturing	1	2	0	7	10
	Service	2	8	1	8	19
	Total	3	10	1	15	29
10-15 years	Manufacturing	1	4	0	12	17
	Service	0	6	0	12	18
	Total	1	10	0	24	35
>15 years	Manufacturing	3	3	0	24	30
	Service	2	5	1	21	29
	Total	5	8	1	45	59
Grand Total		9	28	2	84	123

We can infer from the table 2 above that people in the bracket of 10-15 years (35) and > 15 years (59) of work experience constituting nearly 76% of the sample feel that Artificial Intelligence can be used in non-

operational HR tasks Thus, people falling in the bracket of 10-15 years and > 15 years of work experience are more likely to concur that AI can be used for non-operational HR tasks.

Table 3: AI in non-operational HR tasks

Sector	Years of Work Experience	Never	Not Likely	Likely	Very Likely	Total
Manufacturing	<10 Years	1	2	0	7	10
	10-15 years	1	4	0	12	17
	>15 years	3	3	0	24	30
	Total	5	9	0	43	57
Service	<10 Years	2	8	1	8	19
	10-15 years	0	6	0	12	18
	>15 years	2	5	1	21	29
	Total	4	19	2	41	66
Grand Total		9	28	2	84	123

Similarly, in the table 3, it can be inferred that 66 out of a total sample of 123 people belonged to the service sector and 57 belonged to the manufacturing sector. Out of 66 in the service sector, 19 felt it was unlikely that AI could be used for non-operational HR tasks and 41 who also strongly felt so. Similarly, in the manufacturing sector out of a total of 57, 43 strongly felt that AI could be used in non-operational HR tasks while only 9 felt that it was unlikely. Thus, people from the manufacturing sector are

more likely to approve of artificial intelligence being used for non-operational HR tasks like employee engagement, training and development etc.

Therefore, the hypothesis **H1: Artificial Intelligence can be used in non-operational HR Tasks like Performance reviews, Retention, Engagement** is accepted.

Table 4: Employee Trust

Years of Work Experience	Sector	Never	Not Likely	Likely	Very Likely	Total
<10 years	Manufacturing	4	0	6	0	10
	Service	3	0	6	10	19
	Total	7	0	12	10	29
10-15 years	Manufacturing	2	0	4	11	17
	Service	5	2	8	3	18
	Total	7	2	12	14	35
>15 years	Manufacturing	14	0	9	7	30
	Service	7	0	11	11	29
	Total	21	0	20	18	59
Grand Total		35	2	44	42	123

From Table 4, it follows that respondents who have a post-qualification work experience greater than 15 years and those who have it in the bracket of 10-15 years

strongly support the proposition that the use of artificial intelligent systems would lead to a lack of trust among employees.

Table 5: Employee Trust

Sector	Years of Work Experience	Never	Not Likely	Likely	Very Likely	Total
Manufacturing	<10 Years	4	0	6	0	10
	10-15 years	2	0	4	11	17
	>15 years	14	0	9	7	30
	Total	20	0	19	18	57
Service	<10 Years	3	0	6	10	19
	10-15 years	5	2	8	3	18
	>15 years	7	0	11	11	29
	Total	15	2	25	24	66
Grand Total		35	2	44	42	123

Similarly, from Table 5, majority respondents from the service and manufacturing sectors strongly believe that AI would impact employee trust. Further, people having a post-qualification experience of greater than 15 years forma majority who believe that AI would severely impact employee trust. Overall, 86 out of 123 respondents

i.e. 70% feel that use of AI would negatively impact employee trust. Therefore, the hypothesis:

H7: Artificial Intelligent systems would lead to a lack of trust among employees is accepted.

Table 6: Employee Silence

Years of Work Experience	Sector	Never	Not Likely	Likely	Very Likely	Total
<10 years	Manufacturing	2	0	6	2	10
	Service	5	0	7	7	19
	Total	7	0	13	9	29
10-15 years	Manufacturing	5	0	5	7	17
	Service	6	0	8	4	18
	Total	11	0	13	11	35
>15 years	Manufacturing	16	0	7	7	30

	Service	7	0	11	11	29
	Total	23	0	18	18	59
Grand Total		41	0	44	38	123

Table 7: Employee Silence

Sector	Years of Work Experience	Never	Not Likely	Likely	Very Likely	Total
Manufacturing	<10 Years	2	0	6	2	10
	10-15 years	5	0	5	7	17
	>15 years	16	0	7	7	30
	Total	23	0	18	16	57
Service	<10 Years	5	0	7	7	19
	10-15 years	6	0	8	4	18
	>15 years	7	0	11	11	29
	Total	18	0	26	22	66
Grand Total		41	0	44	38	123

From the above tables 6 and 7 it follows that overall 41 respondents out of a total of 123 say that artificial intelligence would not lead to increased employee silence. This constitutes 33% of the total sample. While the majority of 67% favour the proposition. It also can be inferred from Table 7 that service sector employees and

those having a post-qualification work experience of greater than 15 years feel that AI would lead to increased employee silence. Therefore, the hypothesis:

H6: Artificial Intelligent systems would increase employee silence is accepted.

Table 8: Loss of jobs for HR professionals

Years of Work Experience	Sector	Never	Not Likely	Likely	Very Likely	Total
<10 years	Manufacturing	8	0	2	0	10
	Service	11	0	1	7	19
	Total	19	0	3	7	29
10-15 years	Manufacturing	8	0	2	7	17
	Service	14	0	1	3	18
	Total	22	0	3	10	35
>15 years	Manufacturing	22	0	0	8	30
	Service	22	0	0	7	29
	Total	44	0	0	15	59
Grand Total		85	0	6	32	123

Table 9: Loss of jobs for HR professionals

Sector	Years of Work Experience	Never	Not Likely	Likely	Very Likely	Total
Manufacturing	<10 Years	8	0	2	0	10
	10-15 years	8	0	2	7	17
	>15 years	22	0	0	8	30
	Total	38	0	4	15	57
Service	<10 Years	11	0	1	7	19
	10-15 years	14	0	1	3	18
	>15 years	22	0	0	7	29
	Total	47	0	2	17	66
Grand Total		85	0	6	32	123

Loss of jobs for HR professionals as a result of using AI has been proven to be untrue given the above analysis. It follows from tables 8 and 9 that a majority of 85 out of 123 i.e. 69% respondents feel that this is never likely to happen. It also follows from Table 8 that out of those who strongly negate the proposition majority are from the group having a post-qualification work experience of greater than 15 years. Also, of these 85 respondents, 47 come from the service sector which means that the service

sector HR professionals having a post-qualification work experience of greater than 15 years strongly negate the possibility that the use of AI would throw them out of jobs. Therefore, the hypothesis:

H5: Artificial intelligence can become an existential threat to human resource professionals is rejected.

Table 10: Risk of manipulations and erroneous results

Years of Work Experience	Sector	Never	Not Likely	Likely	Very Likely	Total
<10 years	Manufacturing	4	0	1	5	10
	Service	6	0	1	12	19
	Total	10	0	2	17	29
10-15 years	Manufacturing	4	0	2	11	17
	Service	4	0	8	6	18
	Total	8	0	10	17	35
>15 years	Manufacturing	14	0	7	9	30
	Service	11	0	9	9	29
	Total	25	0	16	18	59
Grand Total		43	0	28	52	123

Table 11: Risk of manipulations and erroneous results

Sector	Years of Work Experience	Never	Not Likely	Likely	Very Likely	Total
Manufacturing	<10 Years	4	0	1	5	10
	10-15 years	4	0	2	11	17
	>15 years	14	0	7	9	30
	Total	22	0	10	25	57
Service	<10 Years	6	0	1	12	19
	10-15 years	4	0	8	6	18
	>15 years	11	0	9	9	29
	Total	21	0	18	27	66
Grand Total		43	0	28	52	123

From Tables 10 and 11, it follows that majority respondents feel that there is an increased risk of data manipulations with the use of AI while majority of the population which supports this belief also belongs to the

service sector as can be seen from Table 11. Therefore, the hypothesis **H3: Artificial intelligence poses a risk of manipulations and erroneous results** is accepted.

Table 12: Lack of a strong system of legislations

Years of Work Experience	Sector	Never	Not Likely	Likely	Very Likely	Total
<10 years	Manufacturing	1	0	8	1	10
	Service	0	3	12	4	19

	Total	1	3	20	5	29
10-15 years	Manufacturing	5	3	7	2	17
	Service	1	3	12	2	18
	Total	6	6	19	4	35
>15 years	Manufacturing	3	6	19	2	30
	Service	5	9	15	0	29
	Total	8	15	34	2	59
Grand Total		15	24	73	11	123

Table 13: Lack of a strong system of legislations

Sector	Years of Work Experience	Never	Not Likely	Likely	Very Likely	Total
Manufacturing	<10 Years	1	0	8	1	10
	10-15 years	5	3	7	2	17
	>15 years	3	6	19	2	30
	Total	9	9	34	5	57
Service	<10 Years	0	3	12	4	19
	10-15 years	1	3	12	2	18
	>15 years	5	9	15	0	29
	Total	6	15	39	6	66
Grand Total		15	24	73	11	123

It can be easily understood from the above tables 12 and 13 that the majority of 84 respondents out of a total of 123 affirm the belief that AI has a lack of strong system of legislations which is a cause of skepticism around its implementation. Though not very strongly, but these respondents which constitute 68% of the total sample do favour the proposition. These belong to the bracket of 10-15 years and > 15 years of post-qualification work

experience and hail from the service sector. One interesting thing to note here is that both strong affirmation and strong negation are nearly the same percentage of the sample. Hence, the hypothesis

H4: Artificial intelligence can cause more harm than gain in future if not optimized and legally regulated is accepted.

Table 14: Loss of Productivity

Years of Work Experience	Sector	Never	Not Likely	Likely	Very Likely	Total
<10 years	Manufacturing	1	0	1	8	10
	Service	2	0	5	12	19
	Total	3	0	6	20	29
10-15 years	Manufacturing	0	0	2	15	17
	Service	5	0	5	8	18
	Total	5	0	7	23	35
>15 years	Manufacturing	10	0	3	17	30
	Service	4	0	9	16	29
	Total	14	0	12	33	59
Grand Total		22	0	25	76	123

Table 15: Loss of Productivity

Sector	Years of Work Experience	Never	Not Likely	Likely	Very Likely	Total
Manufacturing	<10 Years	1	0	1	8	10
	10-15 years	0	0	2	15	17

	>15 years	10	0	3	17	30
	Total	11	0	6	40	57
Service	<10 Years	2	0	5	12	19
	10-15 years	5	0	5	8	18
	>15 years	4	0	9	16	29
	Total	11	0	19	36	66
Grand Total		22	0	25	76	123

61% respondents strongly affirm that the data leaks as an associated consequence of using AI would lead to a loss of employee productivity and would severely impact employee morale. Further, it can be inferred that these group of people are approximately in equal number in the manufacturing and service sector and possess a post-qualification work experience of 10-15 years or greater than 15 years. Thus, the hypothesis:

H2: Use of Artificial Intelligence would have a severe impact on employee productivity is accepted.

Since, years of work experience of the respondent was the only continuous variable in study, it was thought

imperative to check whether this would have any impact on the responses given for each of the seven parameters under study by performing a multinomial logistic regression. It was found that the responses to the variable ‘Risk of manipulations and erroneous results’ and ‘Lack of a strong system of legislations’ would have a significant impact while ‘employee productivity’ could have a marginal impact of years of work experience of the respondent and the responses to the rest of the four parameters won’t be affected by the number of years of post-qualification work experience of the respondent. This can be said with a 95% confidence interval.

Table 16. R Square Value

Sr. No	Parameter	R Square Value (-2 log likelihood)	Significance Result
1	Use of AI in non-operational HR tasks	0.056	Since this value is not less than 0.05 we conclude the effect as insignificant
2	Employee trust	0.548	Since this value is not less than 0.05 we conclude the effect as insignificant
3	Employee silence	0.399	Since this value is not less than 0.05 we conclude the effect as insignificant
4	Loss of jobs for HR professionals	0.122	Since this value is not less than 0.05 we conclude the effect as insignificant
5	Risk of manipulations and erroneous results	0.023	Since this value is less than 0.05 we conclude the effect as significant
6	Lack of a strong system of legislations	0.027	Since this value is less than 0.05 we conclude the effect as significant
7	Loss of Productivity	0.048	Since this value is less than 0.05 we conclude the effect as significant

5. Conclusion

This study reveals the significance of the seven parameters ascertained in the beginning through secondary research of pertinent literature. It therefore, helps us establish that Artificial Intelligence, though a nascent concept in India, does not pose any threat to HRM practitioners losing their jobs (Bughin, J., Hazan, E., Ramaswamy, S., Chui, M., Allas, T., Dahlström, P., Henke, N. and Trench, M., 2017). It further ascertains that in India HRM practitioners do believe that Artificial Intelligence can be put to use for a variety of non-

operational HR tasks like employee training, engagement and performance assessment. This study qualifies that as the number of years of experience grows, the responses to questions concerning employee productivity, manipulations and legalities involved in using AI would differ markedly. This effect is not seen in the other four variables viz: Use of AI in non-operational HR tasks, Employee Trust, Employee Silence and loss of jobs for HR professionals.

However, this study brings forth the following areas of concern that modern HRM practitioners have on the use of AI:

1. The *employee productivity* would go down instead of increasing as a consequence of using AI in HRM.
2. There would be a loss of *employee trust* which would further heighten *employee silence*.
3. The sheer nature of unpredictable outcomes of AI leads to the proposition of a loosely wound system of *legal regulations* around this technology. This is another factor making today's HRM practitioners skeptical about its implementation.
4. There is also a fear of *data leaks and manipulations* as a consequence of using AI which is hindering practitioners to boldly adopt this technology for managing human capital.

Nonetheless, given the above limitations, this study also proves that service sector HRM practitioners are more open to implementing AI in India at the point in time this study is conducted, given all of its limitations and allied consequences.

Implications and suggestions for further research:

- This study has answered the basic question of whether AI can be used in non-operational HR tasks or not but further research can be carried out to find out the repercussions (if any) of doing this. The sample could be sought from those organizations who have successfully implemented AI.
- There is general optimism around the use of AI in India in both the service and manufacturing sector practitioners. However, further research can be carried out to find if there are any training needs felt by these group of people to implement AI and at what stage are organizations are currently towards achieving the same.
- This research has fortified two main assumptions viz:
 - a) AI has slowed down productivity of individuals and
 - b) Use of AI in managing human resources would not lead to HR professionals running out of jobs. The rest of the five hypotheses can be further analyzed to come up with findings suited to various industries.
- Further research can be carried out to find out the readiness of the sample organizations to adopt AI in their HRM practices in terms of a culture, maturity fit.

References

- [1] Ajit, P. (2016). Prediction of employee turnover in organizations using machine learning algorithms. *algorithms*, 4(5), C5.
- [2] Anandarajan, M. (2002). Profiling Web usage in the workplace: A behavior-based artificial intelligence approach. *Journal of Management Information Systems*, 19(1), 243-266.
- [3] Bostrom, N., (2005). A history of transhumanist thought. *Journal of evolution and technology*, 14(1), pp.1-25.
- [4] Brougham, D., & Haar, J. (2018). Smart Technology, Artificial Intelligence, Robotics, and Algorithms (STARA): Employees' perceptions of our future workplace. *Journal of Management & Organization*, 24(2), 239-257.
- [5] Brynjolfsson, E., Rock, D., & Syverson, C. (2018). Artificial intelligence and the modern productivity paradox: A clash of expectations and statistics. In *The Economics of Artificial Intelligence: An Agenda*. University of Chicago Press.
- [6] Bughin, J., Hazan, E., Ramaswamy, S., Chui, M., Allas, T., Dahlström, P., Henke, N. and Trench, M., (2017). Artificial intelligence—the next digital frontier. McKinsey Glob Institute URL https://www.mckinsey.de/files/170620_studie_ai.pdf.
- [7] Cambria, E., Schuller, B., Xia, Y., & Havasi, C. (2013). New avenues in opinion mining and sentiment analysis. *IEEE Intelligent Systems*, 28(2), 15-21.
- [8] Cellan-Jones, R., (2014). Stephen Hawking warns artificial intelligence could end mankind. *BBC News*, 2, p.2014.
- [9] Coeckelbergh, M., (2011). Human development or human enhancement? A methodological reflection on capabilities and the evaluation of information technologies. *Ethics and Information Technology*, 13(2), pp.81-92.
- [10] DeCanio, S. J. (2016). Robots and humans—complements or substitutes?. *Journal of Macroeconomics*, 49, 280-291.
- [11] De Stefano, Valerio, 'Negotiating the Algorithm': Automation, Artificial Intelligence and Labour Protection. (2018). *Comparative Labor Law & Policy Journal*, Forthcoming.
- [12] Etzioni, A. and Etzioni, O., (2017). Incorporating ethics into artificial intelligence. *The Journal of Ethics*, 21(4), pp.403-418.
- [13] Frank, L., & Hohimer, R. E. (2011). Modeling human behavior to anticipate insider attacks. *Journal of Strategic Security*, 4(2), 3.
- [14] Frey, C. B., & Osborne, M. A. (2017). The future of employment: how susceptible are jobs to computerization? *Technological forecasting and social change*, 114, 254-280.
- [15] Furtmueller, E., Wilderom, C., & Tate, M. (2011). Managing recruitment and selection in the digital age: e-HRM and resumes. *Human Systems Management*, 30(4), 243-259.
- [16] Ghosh, S., & Kumaraswamy, M. (2002). Expert systems in human resource management. *Journal of Management Research*, 2(1), 53.

- [17] Gurkaynak, G., Yilmaz, I., & Haksever, G. (2016). Stifling artificial intelligence: Human perils. *Computer Law & Security Review*, 32(5), 749-758.
- [18] Helbing D. (2019) Societal, Economic, Ethical and Legal Challenges of the Digital Revolution: From Big Data to Deep Learning, Artificial Intelligence, and Manipulative Technologies. In: Helbing D. (eds) *Towards Digital Enlightenment*. Springer, Cham.
- [19] Heygate, R. (1994). Being intelligent about 'intelligent' technology. *The McKinsey Quarterly*, (4), 137-148.
- [20] Huber, G. (1990). A theory of the effects of advanced information technologies on organizational design, intelligence, and decision making. *Academy of Management Review*, 1.5: 47-71.
- [21] Iqbal, F. M. (2018). Can Artificial Intelligence Change the Way in Which Companies Recruit, Train, Develop and Manage Human Resources in Workplace? *Asian Journal of Social Sciences and Management Studies*, 5(3), 102-110.
- [22] Khan, S. N., Nicho, M., Takruri, H., Maamar, Z., & Kamoun, F. (2019). Role assigning and taking in cloud computing. *Human Systems Management*, 38(1), 1-27.
- [23] Lawler, J. J., & Elliot, R. (1996). Artificial intelligence in HRM: an experimental study of an expert system. *Journal of Management*, 22(1), 85-111.
- [24] Le, Q. V. (2013). Building high-level features using large scale unsupervised learning. In *Acoustics, Speech and Signal Processing (ICASSP), 2013 IEEE International Conference on* (pp. 8595-8598). IEEE.
- [25] Malinowski, J., Weitzel, T., & Keim, T. (2008). Decision support for team staffing: An automated relational recommendation approach. *Decision Support Systems*, 45(3), 429-447.
- [26] Executive Office of the President, Munoz, C., Director, D. P. C., Megan (US Chief Technology Officer Smith (Office of Science and Technology Policy)), & DJ (Deputy Chief Technology Officer for Data Policy and Chief Data Scientist Patil (Office of Science and Technology Policy)). (2016). *Big data: A report on algorithmic systems, opportunity, and civil rights*. Executive Office of the President.
- [27] Makridakis, S. (2017). The forthcoming Artificial Intelligence (AI) revolution: Its impact on society and firms. *Futures*, 90, 46-60.
- [28] Negnevitsky, M., (2005). *Artificial intelligence: a guide to intelligent systems*. Pearson Education.
- [29] Oz, E., Glass, R., & Behling, R. (1999). Electronic workplace monitoring: what employees think. *Omega*, 27(2), 167-177.
- [30] Pang, B., & Lee, L. (2008). Opinion mining and sentiment analysis. *Foundations and Trends® in Information Retrieval*, 2(1-2), 1-135.
- [31] Parunak, H.V.D., (1996). Applications of distributed artificial intelligence in industry. *Foundations of distributed artificial intelligence*, 2.
- [32] Pradhan, R. K., & Jena, L. K. (2017). Employee performance at workplace: conceptual model and empirical validation. *Business Perspectives and Research*, 5(1), 69-85.
- [33] Posey, C., Bennett, B., Roberts, T., & Lowry, P. (2011). When computer monitoring backfires: Invasion of privacy and organizational injustice as precursors to computer abuse. *Journal of Information System Security*, Vol. 7, No. 1, pp. 24-47, 2011
- [34] Roco, M.C. and Bainbridge, W.S., (2003). Overview converging technologies for improving human performance. In *Converging technologies for improving human performance* (pp. 1-27). Springer, Dordrecht.
- [35] Russell, S. J., & Norvig, P. (2016). *Artificial intelligence: a modern approach*. Malaysia; Pearson Education Limited
- [36] Scherer, M. U. (2015). Regulating artificial intelligence systems: Risks, challenges, competencies, and strategies. *Harv. JL & Tech.*, 29, 353.
- [37] Sexton, R. S., McMurtrey, S., Michalopoulos, J. O., & Smith, A. M. (2005). Employee turnover: a neural network solution. *Computers & Operations Research*, 32(10), 2635-2651.
- [38] Sikaroudi, E., Mohammad, A., Ghousi, R., & Sikaroudi, A. (2015). A data mining approach to employee turnover prediction (case study: Arak automotive parts manufacturing). *Journal of Industrial and Systems Engineering*, 8(4), 106-121.
- [39] Snell, S. A., Stueber, D., & Lepak, D. P. (2002). Virtual HR departments. *Human resource management in virtual organizations*, 81.
- [40] Spector, P. E. (2005). Introduction: emotional intelligence. *Journal of organizational Behavior*, 26(4), 409-410.
- [41] Stoneking, M. D., & Curet, O. L. (2014). U.S. Patent No. 8,788,452. Washington, DC: U.S. Patent and Trademark Office.
- [42] Swailes, S. (2016). The cultural evolution of talent management: A memetic analysis. *Human Resource Development Review*, 15(3), 340-358.
- [43] Veruggio G., Operto F. (2008) *Roboethics: Social and Ethical Implications of Robotics*. In: *Siciliano*

B., Khatib O. (eds) Springer Handbook of Robotics. Springer, Berlin, Heidelberg

[44] Yampolskiy, R. V. (2013). Artificial intelligence safety engineering: Why machine ethics is a wrong approach. In *Philosophy and theory of artificial intelligence* (pp. 389-396). Springer, Berlin, Heidelberg.

[45] Złotowski, J., Yogeewaran, K., & Bartneck, C. (2017). Can we control it? Autonomous robots threaten human identity, uniqueness, safety, and resources. *International Journal of Human-Computer Studies*, 100, 48-54.