



“An Empirical Study on Future Scenario of Indian Industries 5.0 with Artificial Intelligence Technology”

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Abstract:

The whole world is going towards high production and high working efficiency, because of very high competition everyone is racing for going ahead, it is making possible through use of technology in industries, although, the technology is being used from earlier in industries, but in current scenario this technology is not sufficient for competition, therefore, new emerging technology is being used, the name of that technology is artificial intelligence, which is changing adopting by Indian industries for making their industry at global level, the presented research work has been in conducted twenty five IT and other industries in Indore City. The data and research hypothesis have been analyzed by R Programming language.

Keywords: Artificial intelligence, IT, Technology, robotic technology, automation R language

I. Introduction:

Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems. Specific applications of AI include expert systems, natural language processing, and speech recognition by machine.

History of AI

The artificial intelligence beings first appeared in ancient Greek myths. And Aristotle's development of syllogism and its use of deductive reasoning was a key moment in humanity's quest to understand its own intelligence. While the roots are long and deep, the history of AI as we think of it today spans less than a century.

Benefit of AI

- Good at detail-oriented jobs
- Reduced time for data-heavy tasks
- Saves labor and increases productivity
- Delivers consistent results
- Can improve customer satisfaction through personalization

- AI-powered virtual agents are always available

Disadvantages of AI

- Expensive
- Limited supply of qualified workers to build AI tools
- Reflects the biases of its training data, at scale.
- Lack of ability to generalize from one task to another.
- Eliminates human jobs, increasing unemployment rates.
- Requires deep technical expertise.

Use of AI

- Automation.
- Machine learning.
- Machine vision.
- Natural language processing
- Robotics
- Self-driving cars
- Text, image and audio generation.
- Safer Banking
- Health Sector (Wearables)
- Smart Assistants(ChatGPT, Siri, Alexa and Cortana use natural language processing, or NLP)

II. Review of Literature:

Anant Manish Singh, Wasif Bilal Haju.(2022): The title of this research study was Artificial Intelligence ,the secondary data has been used by researchers, the secondary data had been collected by relevant research articles, books and online data base. this research study while concluding, it can be analyzed that AI has benefited computer science because; it is the artificial psychology that made the machines to focus on the philosophical arguments. AI performs tasks faster than human beings and the major goal of artificial intelligence is to create the technology in an intelligent manner. It is proved that artificial intelligence is the computer knowledge that has human traits, however, these computers and robots help the environment to grow, and they respond rationally to help human beings. AI has already impacted lives of people in various fields and will surely continue to do more in the future.

Jagadeesh Kengam (2020): The title of this research study was Artificial Intelligence in Education, the researchers used secondary data for conduction this research study; artificial Intelligence, AIED, emerging, pedagogical used as keywords by researcher. The secondary data had been collected by relevant research articles, books and online data base. The researcher concluded this research study as AI in education is a revolutionary change. According to a report issued by Centre for Integrative Research in Computer and Learning Sciences states that the next level uses of AI in Education is not yet invented. So the people working on AI applications should let the educators and education policy makers know about this in depth. Although there are several cons of using AI in educational sector, our future is AI.

III. Objectives: The research objectives are given below as.

- To analyze use of Artificial intelligence in various industries
- To analyze difference between earlier and artificial intelligence technology.
- To analyze advantage and disadvantages to adoption of Artificial intelligence technology in Indian industries.
- To analyze effect of Artificial intelligence on efficiency of work.
- To analyze challenges for Artificial intelligence technology in Indian industries.
- To analyze impact of industries 5.0 on environment

Hypothesis: The research hypotheses are below.

H₀₁Null Hypothesis: There is no significant difference between earlier and artificial intelligence technology.

H₁₁Alternative Hypothesis: There is significant difference between earlier and artificial intelligence technology.

H₀₂Null Hypothesis: The artificial intelligence technology will not be effected efficiency and productivity of work.

H₁₂ Alternative Hypothesis: The artificial intelligence technology will be effected efficiency and productivity of work.

H₀₃Null Hypothesis: There will not be seen positive impact of industry 5.0 on the environment.

H₁₃ Alternative Hypothesis: There will be seen positive impact of industry 5.0 on the environment.

IV. Research Methodology:

The presented research study has been conducted in Indore. The Primary and secondary data have been used for conducting research study, the secondary data has been collected from relevant research articles, websites, books, annual government reports. The primary data has been collected from twenty five IT and manufacturing industries in Indore through structured questionnaire, there have been made three research hypothesis, which have been tested by **Chi-Square Test** at 5 percent level of significant, the rejection and acceptance of null hypotheses has been taken by comparing with probability value $p=0.05$, data analysis and hypothesis have been performed by R language .

V. Data Analysis and Hypothesis Testing:

Table 1 which type of industry

In which type of industry are you working?				
	Options	Frequency	Percent	Cumulative Percent
Valid	IT industry	15	60.0	60.0
	Manufacturing industry	10	40.0	100.0
	Total	25	100.0	

Table 1 is about; In which type of industry are you working for that option are IT industry, Manufacturing industry for that frequency and percentage are respectively; (15,60.0percent) , (10,40.0percent) from the study of table 1 it is found that; in presented research study the option IT industry is highest frequency and percentage as comparing to other option.

Table 2 Technology in your industry

Are you using Technology in your industry?				
	Options	Frequency	Percent	Cumulative Percent
Valid	Yes	23	92.0	92.0
	No	2	8.0	100.0
	Total	25	100.0	

Table 2 is about; Are you using Technology in your industry for that option are Yes, No for that frequency and percentage are respectively; (23, 92.0 percent), (2,8.0 percent) from the study of table 2 it is found that; in presented research study the option Yes is highest frequency and percentage as comparing to other option ,it means that most of respondents are using technology in their industries.

Table 3 AI is present need of industry

What do you think that, AI is present need of industry?				
	Options	Frequency	Percent	Cumulative Percent
Valid	Yes	17	68.0	68.0
	No	4	16.0	84.0
	I don't Know	4	16.0	100.0
	Total	25	100.0	

Table 3 is about; What do you think that, AI is present need of industry for that option are Yes, No, I don't Know for that frequency and percentage are respectively; (17, 68.0 percent), (4, 16.0 percent), (4, 16.0 percent) from the study of table3 it is found that; in presented research study the option Yes is highest frequency and percentage as comparing to other option, it means that most of respondents are accepting AI is present need of industry .

Table 4 AI in future for your industry

Will you adopt AI in future for your industry?				
	Options	Frequency	Percent	Cumulative Percent
Valid	Yes	20	80.0	80.0
	No	2	8.0	88.0
	I don't Know	3	12.0	100.0
	Total	25	100.0	

Table 4 is about; What do you think that, AI in future for your industry for that option are Yes, No, I don't Know for that frequency and percentage are respectively; (20, 80.0 percent), (2, 8.0 percent), (3, 12.0 percent) from the study of table 4 it is found that; in presented research study the option Yes is highest frequency and percentage as comparing to other option, it means that most of respondents are accepting AI must adopt in future for your industry.

Table 5 AI can affect positively efficiency

What do you think that, AI can affect positively efficiency and productivity of industry?				
	Options	Frequency	Percent	Cumulative Percent
Valid	Yes	17	68.0	68.0
	No	4	16.0	84.0
	I don't Know	4	16.0	100.0
	Total	25	100.0	

Table 5 is about; What do you think that, AI can affect positively efficiency and productivity of industry for that option are Yes, No, I don't Know for that frequency and percentage are respectively; (17, 68.0 percent), (4, 16.0 percent), (4, 16.0 percent) from the study of table 5, it is found that; in presented research study the option Yes is highest frequency and percentage as comparing to other option, it means that most of respondents are accepting AI can affect positively efficiency and productivity of industry.

Table 6 AI is much better than earlier technology

What do you think that, AI is much better than earlier technology?				
Options		Frequency	Percent	Cumulative Percent
Valid	Yes	20	80.0	80.0
	No	3	12.0	92.0
	I don't Know	2	8.0	100.0
	Total	25	100.0	

Table 6 is about; What do you think that, AI can affect positively efficiency and productivity of industry for that option are Yes, No, I don't Know for that frequency and percentage are respectively; (20,80.0 percent),(3, 12.0 percent),(2,8.0 percent) from the study of table 6, it is found that; in presented research study the option Yes is highest frequency and percentage as comparing to other option, it means that most of respondents are accepting AI is much better than earlier technology.

Table 7 Industry 5.0 will effect environment positively

What do you think that, Industry 5.0 will effect environment positively				
Options		Frequency	Percent	Cumulative Percent
Valid	Yes	18	72.0	72.0
	No	01	04.0	76.0
	I don't Know	06	24.0	100.0
	Total	25	100.0	

Testing of Hypothesis:

H₀Null Hypothesis: There is no significant difference between earlier and artificial intelligence technology.

H₁ has been tested by Chi-Square

Table 8 Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
What do you think that, AI is much better than earlier technology?	25	1.2800	.61373	1.00	3.00

From the study of table 8 it is clear that; value of N, Mean, Std. Deviation, Minimum, Maximum are respectively (25,1.2800,.61373,1.0,3.0); further study has been conducted by table 8.

Table 9 Test Statistics

Options	Observed N	Expected N	Residual
Yes	20	8.3	11.7
No	3	8.3	-5.3
I don't Know	2	8.3	-6.3
Total	25		

From the study of table 9 it is clear that; the observation, expected ,residual values are for options Yes, No , I don't Know respectively;(20,8.3,11.7),(3,8.3,-5.3),(2,8.3,-6.3). further study has been conducted by table 9.

Table 10 Chi-Square Test

Chi-Square	24.560
df	2
Asymp. Sig.	.000

From the study of table 10 it is clear that; the calculated value of Chi-Square found 24.560 positive at 2 Degree of freedom and significant value is .000.

Decision: from the above study it is clear that; significant value is less than as comparing to p value =0.05, therefore; in testing of H1 null hypothesis H_{01} has been rejected and alternative hypothesis H_{11} accepted for H1; it means that; : There is significant difference between earlier and artificial intelligence technology.

H_{02} Null Hypothesis: The artificial intelligence technology will not be effected efficiency and productivity of work.

H2 has been tested by Chi-Square

Table 11 Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
What do you think that, AI can affect positively efficiency and productivity of industry?	25	1.4800	.77028	1.00	3.00

From the study of table 10 it is clear that; value of N, Mean, Std. Deviation, Minimum, Maximum are respectively (25,1.4800,.77028,1.0,3.0); further study has been conducted by table 12.

Table 12 Test Statistics

Options	Observed N	Expected N	Residual
Yes	17	8.3	8.7
No	4	8.3	-4.3
I don't Know	4	8.3	-4.3
Total	25		

From the study of table 11 it is clear that; the observation, expected ,residual values are for options Yes, No , I don't Know respectively;(17,8.3,8.7),(4,8.3,-4.3),(4,8.3,-4.3). Further study has been conducted by table 13.

Table 13 Chi-Square

Chi-Square	13.520
df	2
Asymp. Sig.	.001

From the study of table 13 it is clear that; the calculated value of Chi-Square found 13.520 positive at 2 Degree of freedom and significant value is .001.

Decision: from the above study it is clear that; significant value is less than as comparing to p value =0.05, therefore; in testing of H2 null hypothesis H_{02} has been rejected and alternative hypothesis H_{12} accepted for H2; it means that; The artificial intelligence technology will be effected efficiency and productivity of work.

H_{03} Null Hypothesis: There will not be seen positive impact of industry 5.0 on the environment.

H3 has been tested by Chi-Square

Table 14 Descriptive Statistics

Descriptive Statistics					
	N	Mean	Std. Devi	Minimum	Maximum
What do you think that, Industry 5.0 will effect environment positively?	25	1.5200	.87178	1.00	3.00

From the study of table 14 it is clear that; value of N, Mean, Std. Deviation, Minimum, Maximum are respectively (25,1.5200,.87178,1.0,3.0); further study has been conducted by table 15.

Table 15 Test Statistics

Options	Observed N	Expected N	Residual
Yes	18	8.3	9.7
No	1	8.3	-7.3
I don't Know	6	8.3	-2.3
Total	25		

From the study of table 15 it is clear that; the observation, expected ,residual values are for options Yes, No , I don't Know respectively;(18,8.3,9.7),(1,8.3,-7.3),(6,8.3,-2.3). Further study has been conducted by table 16.

Table 16 Chi-Square

Chi-Square	18.320
df	2
Asymp. Sig.	.001

From the study of table 16 it is clear that; the calculated value of Chi-Square found 18.320 positive at 2 Degree of freedom and significant value is .001.

Decision: from the above study it is clear that; significant value is less than as comparing to p value =0.05, therefore; in testing of H3 null hypothesis H_{03} has been rejected and alternative hypothesis H_{13} accepted for H3; it means that; There will be seen positive impact of industry 5.0 on the environment.

Conclusion:

The presented research study has been conducted in Indore with twenty five IT and manufacturing industries after the analysis of collected data, the result of research study concluded as; the artificial intelligence technology is an advance technology it will help in every sectors, it may be called future technology of world, the artificial intelligence technology much advance than earlier technology. The machine can get worked as human mind by artificial intelligence technology but human mind cannot be replaced by artificial intelligence technology, therefore ,it has significant difference with old technology, the artificial intelligence technology is very fast and with high efficiency hence it will affect the production and cost of production of commodities, the artificial intelligence technology may be dangerous for employment of human research in India because, India has too much population but other side the artificial intelligence technology may be generate skill full employment for youth and they can make their global recognition. The industry 5.0 may start a new chapter for conservation of the environment which will promote the green environment by the reducing deforesting, it may be developed pollution free environment for human as well as wildlife also ,still, the many challenges for adoption of artificial intelligence technology in india, likes; high cost of technology, Skill full human resource, government policy.

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