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Benefits of Training and Development Before and After Artificial Intelligence (AI), Need and Perception Level on Factors of Driving Adoption of AI in IT sector.

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Abstract:

Purpose :

The major intention of presenting this research paper is to know whether demographics impact on the study of AI influencing training and development in the IT industry of Bengaluru, especially the IT centre Electronic City. Further, the study is also conducted to know the benefits before and after effective implementation of Artificial Intelligence (AI). Also the study conducted to know the driving factors of need for AI in IT sector and perception level of employees on factors driving the adoption of AI in IT sector. Training and development contributes to the generation of efficiency, health and safety at work and personality development. The scope of AI is growing @ a faster rate with today's technology. AI can build teachable systems that can perform both the education of content and taken action (Suchitra et al. 2022).

Design :A previously well known questionnaire was well administered for the purpose of data collection. x^2, contingency co-efficient, Kendall's co-efficient of concordance and ANOVA statistical tools were performed to analyse the data.

Findings : The study found that all the demographics are impacting on the study. Further, the study found weighable in the training and development benefits after effective implementation of AI. Efficient resource allocation found to be major benefit and the second best benefit found continuous learning and feedback assist in the fraud detection and crimes. Factors like performs high volume tasks easily, need for hazardous tables execution the factors driving the need for AI in IT sector. Further, the study found that factors like adoption of AI will enhance the efficiency of employees, short and fastest learning program, are factors driving perception level of employees.

Keywords : Training, perception, adoption, real time feedback, virtual simulation, fraud, high volume.

Introduction:

AI is speedily transforming every part of people lives, including our work place and professional lives (Suchitra et al. 2022). Business organisations have experienced with technical intelligence for successful organisational performance (Wamba-Taguemdje et al. 2020). Decision makers have started relying on AI i.e., allowing machines to think, before and perform similar to human for enhanced efficiency and perform effectiveness (Dhamija and Bag, 2020). Business have started

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using AI for optimising their value chain and hence found aggressively restructuring organisational process and including human resource processes. (Malik et al., 2020). AI research found its ability in improve organisational and process level performance across several functional areas including operation, marketing, finance and human resource (Dhamija& Bag, 2020).

AI is the defining technology of the next decade due to its ability to enhance human capability at low cost Liu, 2017; Sonwab, 2017). Studies suggest that HRM strategies related to job replacement, human robot / AI collaboration, decision making and learning operations and HRM activities like recruiting, training and job performance are more influenced by AI. The assistance of AI technology may enhance humans everyday lives through the advancement of technology in health care early detection (Beckar, 2018). It is predicted that AI will saturated most industries with an estimated US$ 15.7 trillion contribution to the global economy by 2030 (Murphy et al. 2021). The $320 billion worldwide corporate training market and enhanced worldwide corporate training market and enhanced implementation of AI in learning and development necessitates studying the issues and challenges to AI in learning and development (Barsin, 2018).

AI is increasingly transforming labour lives include workplace and professional lives. AI has the potential to increase training participation including currently underrepresented groups by reducing some of the hurdles that employees experiences. Training is a systematic restructuring of activities and skills through learning education and planned experience. Employees are behind every success in on organisation that shall have different training and development so as to cope with fast changing dynamic competitive business world. Training is essential to all organisations for its long term planning and needs careful preparation if they are to be successful and to attain objectives well in time (BrishnuWoldeyoaunes, et al. 2020).

Statement of the problem:

AI is transferring every area of people lives including employment and professional life at a breakable pace. AI is present practically in every business. AI powered products and solutions are becoming more common in workplace. Further, AI will change training and development. Significantly AI is undoubtedly playing role in employment and after induction of employees play a significant role in training and development programmes. Organisational leaders still come across several issues like individualised learning despite the changes brought by technology over the last a few years. The urgent models that are extremely present in the market are of little use in developing programmes. Organisational leaders still come across several issues like individualised learning despite the changes brought by technology over the last a few years. The urgent models that are extremely present in the market are of little use in developing personalised skills. Further the existing L & D which are available in due market have a complex user interface making of more difficult to the employees to browse and use in the long term.

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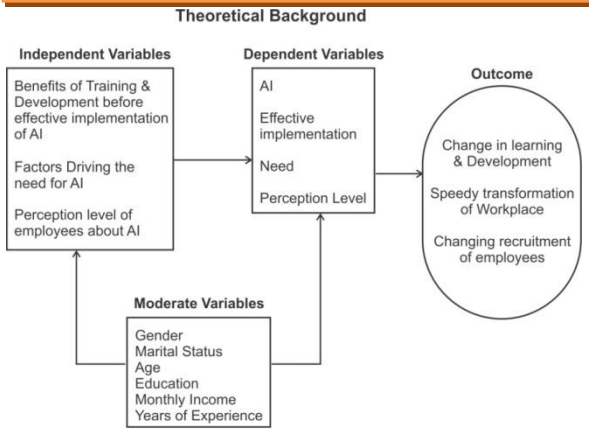

Source: Author's Creation

Review of literature

Stefan (2017) probe the issue of AI development and use in the field of higher education and learning. AI examines new technology's educational impact on how students learn and how organisations train and develop. The latest technologies impact on higher education as examined regarding how organisations train and develop. In implementing teaching and learning, student service and administration innovation and future directions, there is a need to identify several obstacles in student learning.

MandChassignol (2018) discussed the digital technology in education. The intention of the researcher is to identify and learn about the potential impact of artificial technology on learning process. The current literature suggest that teaching approaches, technology assessment and student contact are all important. AI would reshape the educational environment.

Parag Bhatt et al. (2022) stated that AI research has proved its ability to improve organisational and process level performance across several functional areas. Further, the researchers have stated that Ai has been enhancing the efficiency of learning and development process too. Limited studies are available in human resource area. The study explores the AI innovations, adoptions, benefits and contributing factors in the learning and development process using a systematic literature review method. The study also explored contributing factors capable of effective AI based learning.

KanishkaPorwal. (2021) stated that training and development pr4ograms are an effective way of improving the productivity of employees. Further, the researchers expressed that AI very versatile tool and helps organisations to present an effective programme for the whole organisations.

Suchitra, K. et al. (2022) study identified the influencing factors with the neural network of machine learning method and observed that AI will frame that and fast learning programmes for employees and give the real time base feedback on the training and development to the employees. AI improves operation cost and improves the operational efficiency on training and development.

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Objectives of the study

1. To study the level of impact created by demographics on the impact of AI on training and development.
2. To analyse the benefits of training and development before and after AI.
3. To study the factors driving the need for AI in IT sector.
4. To study the level of perception among employees about the factors driving adoption of AI in IT sector.

Hypotheses:

1. The demographics are highly varying significantly impacting on training and development.
2. There are no benefits of training and development either before or after AI implementations.
3. There are no factors driving the need for AI in IT sector.
4. There is no perception among employees about the factors driving adoption of AI in IT sector.

Research questions:

1. What are the reasons behind demographics not impacting on training and development through AI ?
2. What are the benefits of training before and after implementation of AI?
3. What are factors driving the need for AI in IT sector?
4. What is the level of employees perception about factors driving adoption of AI in IT sector.

Research Methodology

Redman and Mary (1923) defines research as "systemised effort to gain new knowledge". Construction of research design requires maximum care as it is going to affect the entire process of research. The present study depends on survey technique for the purpose of primary data collection. The needed primary data gathered by administering a well drafted questionnaire Kothari (2011) defines research methodology as an intellectual expedition and hence should be used in a technical sense. Research activity is.

Participants : The participants of the study included employees of IT sector, Bengaluru. There are 200. IT / ITES companies in Electronic city Bengaluru. Out of top 10 multinational IT companies, Infosys Ltd., Tech Mahindra, HCL Technologies, WIPRO Ltd. & TATA Consultancy Services (TCS) employed 10 each considered.

Data Source : The research uses both primary and secondary data. The primary data collected systematically through a proper administration of questionnaire and researcher himself collected the data by interesting the respondents. The secondary sources include journals, books and internet convenient sampling technique was performed and the sample was fixed at 50.

Study instrument : A well drafted questionnaire was well administered and the required data collected by the researcher by conducting interview with the IT sector employees of Bengaluru.

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Sample and sampling technique : The sample for the study is considered as 50 and all respondents were belongs to Electronic city of Bengaluru as the IT hub of Bengaluru.

Method of analysis : The study performed x^2, contingency co-efficient, Kendall's co-efficient, Kendall's co-efficient of concordance, and ANOVA. Chi-square technique was performed to measure the significant variation in the data. Contingency coefficient technique was performed to know the degree of relationship. Kendall's co-efficient of concordance statistical tool was performed to know the significant variation in the data.

Limitations:

1. The study is confined only Electronic city, the IT hub of Bengaluru.
2. Out of Top 10 IT companies of Electronic city only 5 companies were selected and respondents covered is 10 only.
3. Any generalisation required further depth study.

Survey Findings:

Table-1 highlights data about demographics of respondents. There are 41 males and 9 females and out of 50, married are 41, single 05 and divorced are 4. 26 respondents belongs to the age group of 30-34, 12 to the 25-29, 8 > 25 years and 40 between 20-24 years. 30 are engineering graduates, 10 are master degree holders in computer science, 5 each either degree holders in computers or chartered accountants, law graduates and ICWA certificate holders. The monthly income data reveals that 28 respondents are getting a salary in between 45-54K, 12 getting in the range of 35-44, 5 in between 45-54K, 12 getting in the range of 35-44, 5 in between 25-34, 3 in between 15-24 and 2 > 5K per males. 11 are experienced in between 5-10 followed by 30 < 5 years and 9 > 11 years. 42 undergone training 8 nos. All the socio economic characteristics show significant variation with high agree of relationship between the attributes. The study reveals that males are dominated in this represented study area. There are 26 respondents falling in between 30 - 34, reveals that majority are middle aged who can take up any work relating to AI. There are 30 engineering graduates capable of executing the scheduled job perfectly and 10 respondents are belonging to master degree in computers. 28 are drawing salary in between 45 to 54K and followed by 12 represented drawing a salary 31-44K. There are fresher who are put up <5 years of service and very interestingly 42 are trained.

Table 2 & 3 reveals data about benefits of training and development before and after effective implementation of AI. Before implementation of AI 35 send strongly agree, 15 agree and 10 somewhat agree. 11 respondent expressed about instant feedback, 9 spoke about intelligent taking system providing personalised feedback and 6 each about data driven training insights, continuous learning and further 6 more expressed about widens learners encouragement and motivation.

Table-3 highlights data bout after effective improvement of AI. 26 respondents said about effective resource allocation, 6 about continuous learning and feedback and 4 expressed about virtual simulations and training scenarios. The "w" before application stood at 0.126 and after implementation of AI stood at 1.205. The calculated value bares 25.305 higher than the TV 14.067

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at 0.05 level of significance and hence "w" fails to accept H0 and accepts H1 and it is concluded that there exist high degree of relationship between the two attributes.

Table -4 highlights data about factors driving the need for AI in IT sector. To measure the factors driving the need for AI in IT sector. ANOVA statistical tool was performed. 29 said strongly agree, 14 agree and 7 somewhat agree about the factors driving the need for AI in IT sector. 14 respondents stated about assist in the fraud detection and crimes, 9 expressed about performs high volume tasks easily and 8 one of the opinion that the need of AI in IT sector is felt due to the need for hazardous tasks execution. ANOVA fails to accept H0 and accepts H1 and hence it is concluded that there exist significant variation in the need of AI in the IT sector.

Table -5 reports about the level perception of perception employees in factors driving adoption of AI in the IT sector ANOVA tool was performed. 38 respondents said strongly agree followed by 8 agree and 4 somewhat agree. 21 out of 50 respondents expressed that adoption of AI will enhance the efficiency of employees, 10 expressed about real time feedback analyse, and 8 one of the opinion that short and fastest learning programs will increase the decision making of employees. ANOVA fails to accepts H0 and accepts H1 and hence it is concluded that there exist significant variation in the data.

Discussion : Technology driven AI will dominate in all industries in future irrespective strong level of criticism made against AI particular about deep fluke. There is a serious thinking about to bring suitable legislation across the globe about misuse and misapplication of AI. In the field of training and development the role performed by AI is well recognised. The study presented reveals that the demographics significantly vary and show high relationship in all demographics. The study further reveals about benefits of training and development before and after effective implementation of AI. Before implementation the value of W is 0-126 and after implementation of AI, the w value stood at 1.205. The difference being 1.079 and the value the significance of 'w' using chi-square formula value stood at 25.305 which is higher than the critical value of table rejects H0 and accepts H1 and hence it is concluded that there exists significant variation and high degree of relationship between the variables. Further, the study also found about factors driving the need for AI in IT sector. Factors like fraud detection old crimes, performs high volume tasks easily and need for hazardous tasks execution ANOVA fails to accept H0 and accepts the H1. There are factors like adoption of AI will enhance the efficiency of employees, real time feedback analysis and short and fastest learning programmes. The collected data has been tabulated and suitable quantitative techniques were performed in order to analyse the data.

Conclusion :

The contribution of AI in learning and development covers areas like personalised learning, intelligent tutoring systems, automated content creation, adoptive testing, and predictive analyse. Enterprises will not need of human efforts for the assessment of learning. Being one of the most promising technologies can revolutionalise learning and development. It is ideal for making learning fast and increasing the rate of competition. The study presented reveals that the demographics significantly vary and show high relationship in all demographics. The study further reveals about benefits of training and development before and after effective implementation of AI. Before implementation the value of W is 0-126 and after implementation of AI, the w value stood at

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1.205. The difference being 1.079 and the value the significance of 'w' using chi-square formula value stood at 25.305 which is higher than the critical value of table rejects H_0 and accepts H_1 and hence it is concluded that there exists significant variation and high degree of relationship between the variables. Further, the study also found about factors driving the need for AI in IT sector. Factors like fraud detection old crimes, performs high volume tasks easily and need for hazardous tasks execution ANOVA fails to accept H_0 and accepts the H_1. The perception level of employees are impacted by the factors like adoption of AI will enhance the efficiency of employees, real time feedback analysis and short and fastest learning programmes.

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Table-1 : Demographics of Respondents

Demographics	x^2	TV @ 0.05	df	Result of x^2	"c"	Result of "c"
Gender	20.48	3.841	1	Significant	0.53	High Degree
Marital Status	53.29	5.991	2	Significant	0.71	High Degree
Age in years	22.00	7.815	3	Significant	0.55	High Degree
Education	34.00	7.815	3	Significant	0.63	High Degree
Monthly income (INR)	46.60	9.488	4	Significant	0.69	High Degree
Years of experience	26.10	5.991	2	Significant	0.59	High Degree
Training	23.12	3.801	1	Significant	0.56	Low Degree

Source: Field Survey

Note :x^2 = Chi-square

'c' = $\sqrt{(x^2 / x^2 + N)}$

Where 'c' = Contingency Co-efficient, N = Number of Observations

When the value 'c' is equal or nearer to 1, it means that there is high degree of association between attributes. Contingency co-efficient will always to be less than 1. High degree is considered here if 'c' is 0.50 and above.

Fig-1 : Demographics of Respondents

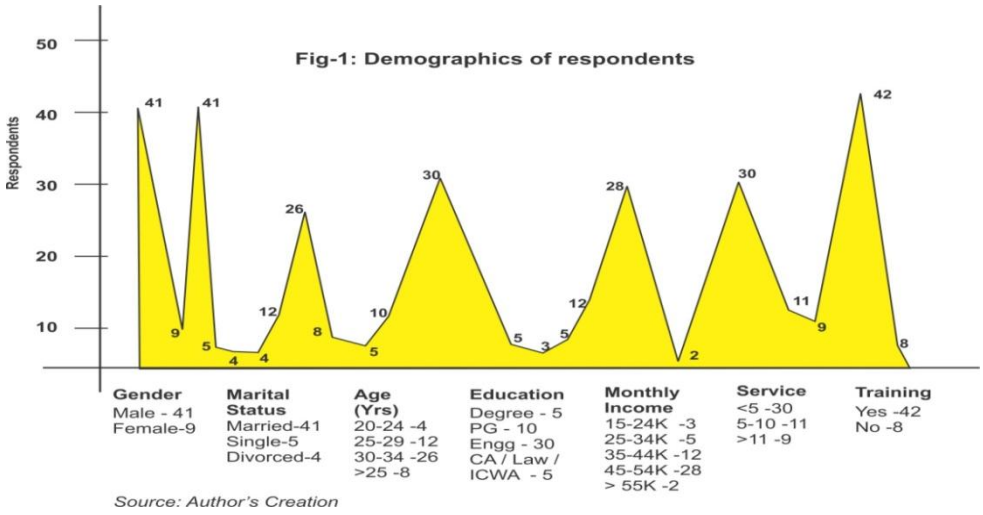

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Table – 2 :Benefits of training, development before effective implementation of AI

Benefits of Training, Development before AI	SA	A	SWA	RT	RT^2
Intelligent tutoring system providing personalities feedback	4	3	2	9	81
Data driven training insights	3	2	1	6	36
Continuous learning and feed back	5	1	-	6	36
Efficient resource allocation	2	1	-	3	9
Instant feedback	2	4	5	11	121
Widens learning encouragement and motivation	3	3	-	6	36
Virtual simulations and training scenarios	3	1	1	5	25
Real time performance assessment	3	-	1	4	16
Total	25	15	10	50	360

Source : Field Survey

Note : SA = Strongly Agree, A = Agree, SWA = Somewhat Agree, RT = Row Total

$SSR = \Sigma RT^2 – (\Sigma RT)^2 / N$
$= 360 – (50)^2 / 9 = 360 - 312.50 = 47.50$
Use the sum of squares (SSR) in the following formula to obtain Kendall's W.
$W = 12 \times SSR / k^2N (N^2 – 1)$
$= 12 \times 47.5 / 9 \times 8 (64 – 1) = 570 / 4536 = 0.126$

Table – 3 :Benefits of training, development after effective implementation of AI

Benefits of Training, Development after AI	SA	A	SWA	RT	RT^2
Intelligent tutoring system providing personalities feedback	2	1	-	3	9
Data driven training insights	2	-	1	3	9
Continuous learning and feed back	3	2	1	6	36
Efficient resource allocation	19	4	3	26	676
Instant feedback	2	-	1	3	9
Widens learning encouragement and motivation	3	1	-1	4	16
Virtual simulations and training scenarios	2	-	1	3	9
Real time performance assessment	2	-	2	2	4
Total	35	8	7	0	768

Source : Field Survey

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Note : SA = Strongly Agree, A = Agree, SWA = Somewhat Agree, RT = Row Total

$SSR = \Sigma RT^2 - (\Sigma RT)^2 / N$
$= 360 - (50)^2 / 9 = 768 - 312.50 = 455.50$
Use the sum of squares (SSR) in the following formula to obtain Kendall's W.
$W = 12 \times SSR / k^2N (N^2 - 1)$
$= 12 \times 455.5 / 9 \times 8 (64 - 1) = 5466 / 4536 = 1.205$
Now deduction 0.126 from 1.205
$= 1.205 - 0.126 = 1.079$

Test the significant of 'w' by using the x^2 static

$x^2 = k (n - 1) w$

$= 3(8-1) \times 1.205 = 3 \times 7 \times 1.205 = 25.305$

Decision: At 7dfwith 0.05 level of significance the TV = 14.067. The calculated value being 25.308 higher than the critical TV and hence "w" fails to accept H0 and accepts H1. Therefore it is concluded that there exist high degree of relationship between the two attributes.

Table-4 :Factors driving the need for AI in IT sector

Factors driving need for AI	SA	A	SWA	Total
AI's deep learning neural networks helps in designing multi layer architecture with varying parameters	3	2	1	6
Helps machines to learn from experience	3	1	-	4
Performs high volume tasks easily	5	3	1	9
Makes data more meaningful	3	1	1	5
Need for hazardous tasks execution	4	2	2	8
Need to do error-free jobs without breaks and emotions	3	1	-	4
Assist in the fraud detection and crimes	8	4	2	14
Total	29	14	7	50

Source : Field Survey

Note :SA - Strongly Agree, A - Agree, SWA - Somewhat Agree

Hypothesis

H0	There exist no significant variation in the data	Reject
H1	There exist significant variation in the data	Accept

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ANOVA Table

Sources of Variation	SS	df	MS	F-ratio	5% F limit from F to 50
Between the sample	268.8917	(3-1) = 2	268.8917 / 2 = 134.45	134.45 / 1.82 = 73.87	
Within the sample	32.8472	(21-3) = 18	32.8472 / 18 = 1.82		(2, 18) = 3.55
Total	301.7389	(21-1) = 20			

Source : Field survey

ANOVA : The calcuated value being 73.87 higher than the TV = 3.55 @ 5% level of significance with df V1 = 2 and V2 = 18 fails to accept H0 and accepts H1. Therefore it is concluded that there exist significant variation in the data.

Table-5 :Perception level of employees on factors driving adoption of AI in IT Sector

Factors driving adoption of AI perception	SA	A	SWA	Total
Short and fastest learning programs will increase the decision making of employees	6	1	1	8
Real time feedback analysis. Feedback improve the AI adoption in the IT sector	7	2	1	10
Machine learning through customised learning program	4	1	-	5
Training cost is low	5	1	-	6
Adoption of AI will enhance the efficiency of employees	16	3	2	21
Total	38	8	4	50

Source : Field Survey

Note :SA - Strongly Agree, A - Aware, SWA - Somewhat Agree

Hypothesis

H0	There exist no significant variation in the data	Reject
H1	There exist significant variation in the data	Accept

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ANOVA Table

Sources of Variation	SS	Df	MS	F-ratio	5% F limit from F to 50
Between the sample	138.40	(3-1) = 2	138.4 / 2 = 69.2	69.20 / 8.267 = 8.37	
Within the sample	99.20	(15-3) = 12	99.2/12 = 8.267		(2, 12) = 3.88
Total		(15 - 1) = 14			

Source : Field survey

ANOVA : The calculated value being 8.377 higher than the TV = 3.88 @ 5% level of significance with df V1 = 2 and V2 = 12 fails to accept H_0 and accepts H_1. Therefore it is concluded that there exist significant variation in the data.

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