Leveraging AI to predict training outcomes

Saroj Kumar Sahoo
Research Scholar, Department of Business Management, F.M. University, Balasore, Odisha
Email Id: saroj@srustiacademy.ac.in

Dr. Padmalita Routray
Research Supervisor and Professor, Department of Business Administration, F.M.University, Balasore, Odisha
Email Id : padmalita@gmail.com

Abstract: *This study examines the relationship between artificial intelligence (AI) and training and development, emphasizing how AI can improve learning outcomes, maximize skill development, and customize training experiences. This study investigates several AI-driven technologies and approaches used in training and development contexts through an extensive examination of recent research and case studies. These include natural language processing (NLP) for training support, simulation-based training environments, adaptive training platforms, individualized learning algorithms, and predictive analytics for performance enhancement. The study also addresses how AI may be used to address obstacles, change conventional training paradigms, and promote an ongoing learning culture in businesses. The goal of the current study is to determine how AI is applied, what its benefits are, and what obstacles it faces in the field of training and development. The method used in this paper is analyses of the literature findings on importance of training and development with support of AI.In conclusion, it provides perspectives on strategies for application and emphasizing chances to use AI to improve training and development programs in the digital age.AI has a big impact on governments, people, and society.Consequently, the process of implementation has greater room for improvement.*

Keywords*: Artificial Intelligence, Training and development, training outcomes, training environment.*

Introduction

Every generation brings with it the development of amazing new technologies. Integrating human intellect with machine-based intelligent systems is the aim of artificial intelligence. Many sectors are putting in place considerably better systems to compete in the developed market. In the field of training approaches, artificial intelligence (AI) has become a game-changer, providing a plethora of creative solutions to maximize skill development and improve learning outcomes [7]. Through the integration of AI-driven technology into training programs, businesses from a variety of industries can transform the way they get people ready for success. AI enables educators and students to achieve unprecedented levels of productivity, efficacy, and engagement through customized learning programs, adaptive tests, and immersive simulations. Investigating how AI improves training is not only a matter of curiosity in this era of rapid technological innovation, but it is also a strategic need for remaining competitive and satisfying the changing needs of learners in the digital age. This paper explores the various ways that artificial intelligence (AI) enhances training, looking at how it can revolutionize professional development, education, and other areas.

Literature Review

Artificial intelligence (AI) has generated a lot of attention in training because of its potential to

improve learning outcomes, streamline training procedures, and customize educational experiences. The goal of this review of the literature is to investigate current studies, approaches, and uses of AI for training. Vygotsky, L. S. (1978)[1] proposed that by customizing instructional materials to each learner's requirements, preferences, and learning style, artificial intelligence has completely transformed personalized learning.

Pane et al.(2014) [2] proposed that learner's data, such as past performance, hobbies, and cognitive capacities, are analyzed by algorithms to provide personalized learning paths and resources. Personalized learning enhances engagement, information retention, and academic accomplishment, according to studies.

Mislevy et al (2003) [3] found out that AI-powered adaptive exams dynamically modify the complexity of the questions in real-time in response to the learners' answers. In addition to identifying areas of weakness and offering focused treatments to enhance skill improvement, these tests provide quick feedback. Studies show that adaptive tests improve diagnostic precision and learning effectiveness

Johnson et al.(2005) [4] proposed that AI-enhanced training simulations mimic real-world situations, giving students a risk-free environment in which to hone their skills. AI systems make it easier to create scenarios, provide adaptive feedback, and assess performance. Studies reveal that AI-enhanced simulations enhance decision-making, skill learning, and transferability to real-world situations. Further Kenny et al.(2019)[5] suggested thatArtificial intelligence (AI) technologies improve simulation-based training by generating intelligent virtual agents, realistic scenarios, and flexible feedback systems. These simulations enable students to hone their abilities in a secure setting, promoting experience learning and the transfer of learned skills to actual situations.

Bunt et al (2010) [6] investigated that an improved learning experience is achieved through chatbots and virtual assistants driven by natural language processing (NLP) that offer immediate assistance, respond to inquiries, and give training materials on demand.

With the help of NLP-driven support systems, simulation-based training environments, adaptive training platforms, and personalized learning experiences, AI technologies have a great deal of promise to enhance training activities. These developments help to raise learner engagement, improve learning outcomes, and make it easier for students to acquire new skills in a variety of training areas.

Artificial intelligence is therefore becoming more and more crucial for the development of all employees. Development and training are components of human resource management. As a result of training, people might advance in their existing positions by becoming more responsible in the future. Their added abilities can be effectively utilized to achieve success in the corporate world. It is appropriate to assess worker performance, identify the real issues at work, and provide relevant training.It is imperative to recognize that effective and successful training is a certain success for the business. Artificial intelligence will benefit both the company and the employee when utilized properly. Training and growth in artificial intelligence are essential for an organization to succeed. This study will attempt to understand the most effective ways to use AI through theoretical and conceptual research.

Objectives

1. To have a knowledge about uses of AI in training and development
2. To find out the advantages of using AI in training and development
3. To find out the challenges while using AI in training and development
4. Methodology

This study investigates the effects, benefits, and issues that come up when artificial intelligence is applied to human resource management training

and development within a company. It is important to investigate every possibility when attempting to determine how an artificial intelligence system in the training and development division relates to the company and the characteristics of a particular employee. As we started to investigate various aspects, we framed the exploration of AI applications as a process. We decided to examine how an organization's performance is affected when AI is used for training and development. The performance study may cover profit, income, labour cost per person, and profit per person. To enable analysis of the outcomes and transparency of the staff training process, each of these has been documented and labelled with indicators. We began our analysis with Watson Analytics. During this procedure, it is found that machines process and learn from everyday human language using the Watson Analytics technology platform. To get the right answers, we can simply integrate the data into the procedure and won't even have to download any software. After the process was finished, we observed that the net income of the company the year prior had an impact on the training and development of the organization. It was also mentioned that the decision to use artificial intelligence (AI) in training and development will determine the organization's performance, profitability, and rate of expansion. Our analysis also showed that a company's revenue from the preceding fiscal year had an impact on its decision to employ AI.

Conceptual analysis to apply AI to corporate training and development

Training is the process of giving staff members the newest and most modern skills possible so they may perform better and progress the business's operations. Training is therefore an essential task that promotes the development of an organization's human resources. Technology invariably becomes outdated with time. The system of a business would change faster as a result of advancements in technical, behavioural, and managerial domains. Training is therefore an essential process for applying new knowledge and expanding it in the marketplace. Studies show that businesses with training budgets have the highest gross earnings per employee and sales.

Artificial intelligence plays a key role in the successful implementation of training and development protocols for improved organizational workflow. But it is a difficult undertaking to accomplish. This research methodology aids in the collection of data needed to create the conceptual study for the company.

Many different types of organizations are currently using artificial intelligence extensively to improve their operations and communicate with customers. It supports fraud detection and transaction analysis. Many artificial intelligence (AI) solutions are currently being used for training and development in order to expand businesses. Through a range of training programs, employees must collaborate and take part in order to understand about the changes as an essential part of growthKenny et al.(2019)[5]. Artificial intelligence must be applied to enhance training techniques and approaches. The approach of artificial intelligence contributes to the improvement of corporate training and development.

- Integrated Training in a Workflow Pattern: A minimum of 1% of an employee's time is dedicated to receiving new technology training in an organization. This is not enough to sustain a faster rate of company expansion. As a result, it is an extremely depressing reality for many employees. In this case, artificial intelligence is important and helps to solve the problem. Artificial intelligence provides fragments of teaching by decomposing things automatically.
- Searching and Finding: In order to perform their daily jobs, personnel must use applicable information in each situation. Artificial intelligence makes it possible to sort data quickly and respond to all queries quickly. Artificial intelligence recommends employing

content tags to expedite and save time during the learning process.

- Training and learning impact measurement: It's critical to evaluate and analyze learners' comprehension in training programs. Artificial intelligence aids in the challenging process of putting it into effect. a critical component of the training program's data is reviewed and contrasted with data from the past and present.
- AI raises training completion rates: Busy workers often miss training sessions because of their hectic schedules. AI helps them bypass these missed opportunities. Artificial intelligence will be used to increase pupils' interest.

Advantages of including AI in training and development

Personalized and automated learning strategies are made possible by the combination of technologies and data acquisition. The Trainee will now be able to communicate with the Artificial Intelligence. This process increases productivity for the corporate employee.

A company's departments progressively expand their use of online education. Artificial intelligence is used by the instructors in an organization to provide digital instruction to the workers. There are benefits to working more productively and being responsive. It's evolving into a customized process. instructing and growing.

With the use of artificial intelligence, the trainer can identify skill gaps in the students. It also offers a workaround that involves using artificial intelligence. Machine learning is one of the many subfields that make up artificial intelligence.

Artificial intelligence can gather and analyse large amounts of data from historical data. It possesses the unique capacity to assess all the prior data instantaneously and swiftly. The artificial intelligence program can retain and retrieve historical data at any given time. The information at hand could consist of historical learning patterns or more recent material. As more data becomes available to the algorithm, the result's accuracy will rise. Investigating artificial intelligence is therefore beneficial for fostering fruitful social interactionsLive Tiles, (2017)[8].

Challenges in Using AI for Training

Artificial intelligence is a program created to eliminate obstacles that prevent an organization from improving its commercial operations. Artificial intelligence is improving the current process of training and development in this way. Nowadays, AI is constantly being developed. Here, we must list the drawbacks of utilizing AI for development and training.

- Algorithmic Bias: An algorithm is essential to the development of artificial intelligence. It runs on its own. Artificial intelligence may be in danger due to algorithmic bias. The artificial intelligence is useful if the data is provided by a third party.
- False Information: While the content is being updated, there could be serious ramifications for artificial intelligence. Artificial intelligence can only work effectively as a result when staff members precisely enter the necessary data.
- Transparency: To encourage students to provide accurate answers, all tasks should be transparent. In order to get accurate and high-quality results from artificial intelligence, the user needs to be fully transparent about his work processes.
- Privacy and Security: Artificial intelligence typically requires a lot of data to operate successfully and efficiently. Students involved in the training and development of the organization must provide the information. The information provided here should be regarded as confidential since it occasionally contains private information. Thus, when gathering the data, all applicable privacy rules and protections should have been observedLive Tiles, (2017) [8].

The strategy for implementing artificial intelligence in training and development

We tried to come up with creative methods to evaluate an employee's competencies in a way that would produce accurate results and have a favourable effect.

This approach will stimulate the creation of new tools and techniques with continuing use.

This highlights the secret to an organization's success following the use of AIAutor. D. et al (2003)[9]. It will help identify problems and the barriers that keep them from being adapted in businesses.

As such, it facilitates awareness-raising consistent with business goals.

Three main components are involved in system implementation are

- Accessibility of Assessment Instruments
- Conducting an assessment workshop
- Offering assistance.

To assess a person's competency, many programs are selected. This helps identify proficiency and distinguish true talent in various Artificial Intelligence standards, improving the population of people in that particular category. Experts are therefore ready to provide the company a significant financial boost.

A baseline data set can assist overcome ignorance and motivate experts to apply their knowledge to advance the organization's artificial intelligence efforts. It is essential to have baseline data when evaluating the adoption of artificial intelligence. The total deficiency of baseline data could pose significant challenges to the review's successful completion. This divide needs to be filled as quickly as feasible[7].

The collection of data for the assessment must be documented as soon as is practical. The following techniques are to be taken into account while evaluating trainees for the usage of artificial intelligence: Action plans for trainees, documentation of performance and monitoring, questionnaires and surveys for follow-up, and group meetings Autor. D. et al (2003)[9]. To properly complete the AI implementation process, all these records will be needed. After that, the following AI application techniques were used to mitigate the influence on training and developmentLive Tiles, (2017) [8].

Considering it, the following AI application techniques are used to mitigate the influence on training and development:

- A proper trend line has to be maintained in order to provide accurate and trustworthy statistics.
- Approximations of each trainee's aptitude
- An estimation of the level of performance for each management. This approach will be made simpler by using a focus group.

Estimating customer input for the use of AI

Discussions

This investigation has demonstrated the vital significance artificial intelligence plays in the corporate world. It suggests that it will keep expanding in the future. Artificial intelligence has the ability to link unrelated tasks and produce useful output from an automated system. AI, however, isn't the solution for the advanced training course. The training and development section's inability to identify humour, insincerity, and disdain from staff is evident in multiple efforts, making it difficult to achieve AI requirements. Using an algorithm that can even eliminate the usage of capital letters and repetitive punctuation, it lowers the superpower result. The excellent book "Black Box Society" emphasizes the AI-automated technological system.

Decisions are now made based entirely on automated services in all fields, including business and higher education; humans never review the decisions made in any given circumstance. In the same way, artificial intelligence plays a significant role in the company. Consequently, the human-operated system has been replaced by a fully automated one. Artificial intelligence has significantly improved any organization's economy in terms

of impact. Therefore, making training and development investments has increased the likelihood that any organization's development will improve [10]. Our investigation indicates that Google just spent almost $400 million in the EU to finish implementing artificial intelligence. They had founded the London-based AI start-up DeepMind Technologies to focus on the system with cutting-edge learning and algorithms. Furthermore, they had made investments in the German Research Centre for Artificial Intelligence, another artificial intelligence institution.

Artificial Intelligence is constantly influencing corporate life in the modern world. Artificial intelligence (AI) application has a big impact on human resource management (HRM). Thus, it is anticipated that the students will be prepared to apply AI in a significant way and support the company's digital transformation. The intricacies of training and development are examined in this research, along with the need for AI to be used in this process. The study offered assurances regarding the expansion of the company when AI was incorporated into training and developmentValle. R,(2014) [11]

We intend to enhance the HR department's system in the future to facilitate firms' adoption of training and development programs. We also want to cultivate the creativity required to produce accurate outcomes and detect mistakes promptly. But when we utilize AI to alert other academics, we want to draw attention to specific problems. In order to demonstrate that AI has been successfully integrated, our research also addresses how AI has affected training and development. Consequently, we addressed the inquiry on the degree to which various firms embrace digital transformation.

Conclusion

We conclude that training and development can successfully integrate artificial intelligence technology after carefully analysing the work of proficient professionals. Training and trials with this individual were essential in bringing about the major change. In a similar vein, incorporating artificial intelligence requires significant investment in training and research. Our analysis also reveals the methodology used to assess an employee's capabilities. Therefore, we contend that, with the help of cutting-edge research and technology, artificial intelligence is poised to revolutionize every business. Many firms worldwide are using artificial intelligence because of its efficacy and high-quality outcomes. AI has a big impact on governments, people, and society. Consequently, the process of implementation has greater room for improvement. Furthermore, since AI is being included into training and It was concluded that AI will have a big impact on firms' ability to grow financially when they are still in the growth stages. Furthermore, it has been amply shown that employing AI for staff training yields favourable outcomes in a number of domains, such as augmenting sales via AI utilization, diminishing expenses and duration, elevating efficiency, expediting decision-making, and minimizing human errors.

Certain implications are found during research. Artificial intelligence has the potential to address problems such as a shortage of skilled and experienced personnel. Moreover, it is believed that the type of error that firms are most vulnerable to is human error.

As soon as it is practical, the data collection for the assessment must be documented. When evaluating trainees for artificial intelligence application, the following techniques must to be taken into account: group meetings, follow-up questionnaires, follow-up surveys, performance and monitoring records, and trainee action plans

Reference

1. Vygotsky, L. S. (1978). Mind in Society: The Development of Higher Psychological Processes. Harvard University Press.
2. Pane, J. F., Griffin, B. A., McCaffrey, D. F., & Karam, R. (2014). Effectiveness of Cognitive Tutor Algebra I at Scale. Educational Evaluation and Policy Analysis, 36(2), 127 – 144. https://doi.org/10.3102/0162373713507480

3. Mislevy, R. J., Steinberg, L. S., & Almond, R. G. (2003). On the Structure of Educational Assessments. Measurement: Interdisciplinary Research & Perspectives, 1(1), 3–62. https://doi.org/10.1207/s15366359mea0101_2

4. Johnson, W. L., Vilhjálmsson, H. H., Marsella, S. C., & Hartholt, A. (2005). Serious Games for Language Learning: How Much Game, How Much AI? Proceedings of the 2005 Conference on Artificial Intelligence in Education: Supporting Learning Through Intelligent and Socially Informed Technology, 306–313. https://doi.org/10.1007/11510888_38

5. Kenny, R. F., van Rooyen, A., & Bower, M. (2019). The Role of AI in Game-Based Learning: A Review. International Journal of Artificial Intelligence in Education, 29(2), 202–226. https://doi.org/10.1007/s40593-018-0169-6

6. Bunt, A., Conati, C., Hsiao, I.-H., Muldner, K., & Zhu, M. (2010). Using Natural Language Processing to Analyze Tutorial Dialog. Proceedings of the 23rd International Conference on Computational Linguistics: Posters, 100–108. https://www.aclweb.org/anthology/C10-2017.pdf

7. Adams. R. L, "10 powerful examples of artificial intelligence in use today", Forbes, 2017.

8. Live Tiles, "15 pros and cons of artificial intelligence in the classroom", Live Tiles, 2017.

9. Autor. D., F. Levy and R. J. Murnane, "The Skill Content of Recent Technological Change: An Empirical Exploration", Quarterly Journal of Economics, vol.118, no.4, pp. 1279–333, 2003.

10. William Vorhies, "Artificial general intelligence-TheHolyGrailofAI",

DataScienceCentral.com,2016

11. Valle. R; Martýn. F; Romero PM; Dolan.S, "Businessstrategy,workprocessesand human resource training: are they congruent", Journal of Organizational Behavior, vol.21, pp. 283-297, 2014