WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Enhancing Training Efficiency and Cost Reduction through Digital and Hybrid Models: A Case Study of Vestas

Dr. S. Suganya[1], Manu K Jacob[2]

[1] Associate Professor, CMS Institute of Management Studies, Bharathiar University, Coimbatore
[2] Research Scholar, CMS Institute of Management Studies, Bharathiar University, Coimbatore

ABSTRACT:

This study examines how Vestas, a global leader in wind energy, has realized substantial cost savings by implementing digital and hybrid training models for its service and installation technicians. By shifting away from conventional in-person training, Vestas has streamlined its training operations, reduced operational expenditures, and improved resource allocation. Notable areas of cost efficiency include decreased travel and lodging costs, recovery of productive working hours, elimination of expenses related to physical simulators, and prevention of turbine downtime. The findings illustrate the economic advantages of digital and hybrid training approaches and offer practical guidance for organizations aiming to boost training effectiveness while minimizing costs.

Key words: Digital Training, Hybrid Learning Models, Cost Efficiency, Workforce Optimization and Wind Energy Sector

Introduction

In the highly competitive wind energy sector, where precision, efficiency, and continuous upskilling are essential, Vestas has embraced digital and hybrid training models for its service and installation technicians. These innovative approaches not only improve learning outcomes but also result in significant cost savings. Traditional in-person training, though effective, involves considerable expenses related to travel, accommodation, and logistics. The transition to digital and hybrid models has allowed Vestas to optimize training processes, reduce operational costs, and maximize resource utilization. The COVID-19 pandemic accelerated the adoption of digital training across industries, highlighting its flexibility and financial benefits (Allen & Seaman, 2017). For a geographically diverse organization like Vestas, digital and hybrid training has also enhanced accessibility for technicians in remote regions (Van Dijk, 2020). This article explores the specific areas where cost savings have been realized and considers the broader implications for training practices in the renewable energy industry.

Methodology

This study uses a conceptual and analytical methodology to identify and evaluate cost-related factors associated with digital and hybrid training. The approach includes three key steps. First, it identifies cost drivers such as travel, accommodation, lost manpower hours, physical simulator expenses, trainer travel, turbine downtime, logistical overheads, and the scalability of digital content. Second, it compares traditional in-person training expenses with those of digital and hybrid models, using Vestas as a case study. Finally, it assesses the return on investment (ROI) and long-term operational efficiencies of these training approaches to evaluate their cost-effectiveness.

Analysis of Cost-Saving Factors

A major area of cost reduction has been the significant decrease in visa, travel, and accommodation expenses. Traditionally, training required technicians to travel to centralized locations, often across borders, resulting in substantial costs. Digital and hybrid training allows technicians to engage remotely, eliminating much of this financial burden. Along with cost reductions, the recovery of lost manpower hours during travel has improved productivity. Technicians can now spend more time on operational duties while concurrently participating in training, maximizing their value to the organization.

Another significant saving comes from the elimination of physical simulators, which are expensive to produce, maintain, and transport. Vestas has replaced these with cost-effective virtual simulations and augmented reality (AR) tools, which also offer scalability and frequent updates. Similarly, by enabling trainers to deliver sessions remotely, Vestas has avoided the costs associated with trainer travel, including visas and lodging.

Crucially, digital training eliminates the need to take turbines offline for training purposes—a practice that previously resulted in lost revenue and

contractual complications. Virtual simulations now provide technicians with practical experience without disrupting energy production. Additionally, digital content, once created, can be reused across multiple sessions and locations. This scalability reduces the per-learner cost and ensures content remains up-to-date with evolving technology.

Reduced logistical overheads—such as venue booking, transportation of equipment, and administrative support—further contribute to cost savings. Finally, digital and hybrid training models enhance learning efficiency. By incorporating adaptive technologies, training can be tailored to individual needs, reducing the overall duration of training programs and associated costs.

Discussion

The cost-saving impact of digital and hybrid training at Vestas is substantial and multifaceted. Through reduced travel and accommodation expenses, regained manpower hours, and the elimination of simulator and turbine downtime costs, Vestas has achieved a more efficient and financially sustainable training model. These benefits are complemented by the scalability, flexibility, and personalization of digital learning, reinforcing Vestas' position as a pioneer in operational excellence within the renewable energy sector.

Nonetheless, the transition is not without its challenges. Initial investments in digital infrastructure—including learning management systems (LMS), virtual reality (VR), and AR platforms—can be considerable. Creating high-quality digital content requires specialized design and multimedia production skills, and hardware such as VR headsets or tablets must be distributed across a global workforce. Ongoing expenses related to system maintenance, licensing fees, and user support further add to the total cost of ownership.

Another hurdle is the uncertainty around measuring ROI. Quantifying the benefits of improved employee performance or reduced downtime is complex and often lacks immediate, tangible metrics. Additionally, underutilization of digital tools or resistance to change from trainers and participants can affect the efficiency and perceived value of digital training (Kotter, 2012; Prensky, 2001).

Exclusion of Financial Factors from the Training Digitalization Decision Scale

In developing the Training Digitalization Decision Scale for a doctoral thesis, financial challenges and ROI uncertainty were deliberately excluded. This decision was grounded in the recognition that these aspects require detailed financial modeling, which is beyond the scope of a generalized decision framework. Upfront investments in infrastructure, content, and hardware—as well as ongoing costs for maintenance, licensing, and training support—are organization-specific and vary widely.

Furthermore, assessing ROI in training is inherently complex. Many of the benefits, such as skill acquisition or improved operational performance, are difficult to quantify in financial terms. Including such variable factors would complicate the decision scale and reduce its usability. Instead, the scale focuses on qualitative, non-financial factors such as geographic dispersion of learners, network infrastructure, training complexity, and resistance to change.

This approach keeps the scale broadly applicable and practical, allowing organizations to assess their readiness for digital training without needing detailed financial analysis. While financial factors remain important, they are better addressed through separate tools or frameworks. Future research could develop such a financial model to complement the decision scale and provide a more comprehensive evaluation process.

Conclusion

The digitalization and hybridization of training at Vestas has modernized the learning experience while delivering substantial financial and operational benefits. By eliminating many of the traditional costs associated with in-person training—such as travel, accommodation, simulator use, and turbine downtime—Vestas has significantly optimized its training strategy. Enhanced scalability, improved learning efficiency, and flexible content delivery further strengthen this approach.

As the renewable energy sector continues to evolve, adopting cost-effective, scalable, and technologically advanced training solutions will be crucial. While financial challenges remain—particularly related to upfront investment and ROI measurement—these can be addressed through careful planning and strategic implementation. Future research should explore the financial dimensions of training digitalization more deeply, ideally through the development of a complementary financial framework. For now, Vestas offers a compelling case study in how digital transformation can yield both operational excellence and long-term cost savings.

REFERENCES :

1. Alenezi, A. (2020). Barriers to participation in learning management systems in Saudi Arabian universities. Education and Information Technologies, 25(3), 2487–2500.
2. Al-Fraihat, D., Joy, M., & Sinclair, J. (2020). Evaluating e-learning systems success: An empirical study. Computers in Human Behavior, 102, 67–86.

3. Almahasees, Z., Mohsen, K., & Amin, M. O. (2021). Faculties and students' perceptions of online learning during COVID-19. Education and Information Technologies, 26(6), 6745–6767.

4. Allen, I. E., & Seaman, J. (2017). Digital learning compass: Distance education enrollment report 2017. Babson Survey Research Group.

5. Bates, A. W. (2015). Teaching in a digital age: Guidelines for designing teaching and learning. BCcampus.

6. Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. Educause Review.

7. International Renewable Energy Agency (IRENA). (2021). Renewable energy and jobs: Annual review 2021

8. Kirkpatrick, D. L., & Kirkpatrick, J. D. (2006). Evaluating training programs: The four levels (3rd ed.). Berrett-Koehler Publishers.

9. Kotter, J. P. (2012). Leading change. Harvard Business Review Press.

10. Lwoga, E. T., & Komba, M. (2020). Critical success factors for e-learning management systems in developing countries. International Journal of Education and Development using Information and Communication Technology, 16(2), 55–78.

11. Moore, M. G., Dickson-Deane, C., & Galyen, K. (2011). E-learning, online learning, and distance learning environments: Are they the same? Internet and Higher Education, 14(2), 129–135.

12. Noe, R. A., Hollenbeck, J. R., Gerhart, B., & Wright, P. M. (2022). Fundamentals of human resource management (9th ed.). McGraw Hill.

13. Pan, G., & Bonk, C. J. (2007). The emergence of open-source software in North America. International Review of Research in Open and Distance Learning, 8(3).

14. Pappas, C. (2021). How to calculate the ROI of online training. eLearning Industry.

15. Prensky, M. (2001). Digital natives, digital immigrants. On the Horizon, 9(5), 1–6.

16. Salas, E., Tannenbaum, S. I., Kraiger, K., & Smith-Jentsch, K. A. (2012). The science of training and development in organizations: What matters in practice. Psychological Science in the Public Interest, 13(2), 74–101.

17. Siemens, G. (2005). Connectivism: A learning theory for the digital age. International Journal of Instructional Technology and Distance Learning, 2(1).

18. Singh, A., & Sharma, A. (2022). E-learning: A boon during the COVID-19 pandemic. Journal of Educational Technology Systems, 50(4), 487–504.

19. Van Dijk, J. A. G. M. (2020). The digital divide (2nd ed.). Polity Press.

20. Wang, M., & Antonenko, P. (2017). Instructor strategies for supporting student learning with virtual labs in online science courses. British Journal of Educational Technology, 48(4), 776–791.