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Research Article

Digital Training: Issues and Concerns for Blue-Collar Workers in the Construction Industry

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ABSTRACT

The Indian construction industry has experienced a geometric rise and change, and blue-collar workers have been the key to its success. With the development of the construction industry, the requirement for high-level training techniques, namely, digital training, will be more and more significant. This paper explores the problems and concerns of the implementation of digital training of the blue-collar workers in the construction industry, its effects on productivity and skills development, and the overall enhancement of staff productivity. The paper reviews the literature on the digital training method and discusses the issues of the construction company, including the adaptation to technologies, change management, and workforce preparedness. The paper has outlined some of the main areas where digital trading can be used to improve performance, cut costs, and increase safety. Moreover, it makes realistic recommendations on how to eliminate the obstacles to the adaptation and optimization of the digital training programs for blue-collar workers. The importance of digital transformation in the creation of a skilled and flexible workforce is also noted in this paper.

Keyword: Digital training, Blue-Collar Workers, Construction Industry, Skill Development, Workforce Productivity, Change Management, Digital Transformation

1.0 Introduction

1.1 Construction Industry

The Construction Sector in India has experienced paradigm shifts over the last ten years. It is experiencing massive growth, and it is making a very important contribution to our nation's economic development. (Anil Sahney-2014). The industry, like any other industry, relies on the performance of workers, and blue-collar workers have a great role to play. The rivalry is stiff in the construction firms. Therefore, the efficiency of workers is bound to occur.

The National Productivity Council (NPC) and the Construction Industry Development Council (CIDC) have emphasized the value of skill development and training as a means of raising productivity and profitability in the Indian construction sector (Sourav Dixit 2017). The construction workers need to be trained to serve various purposes, such as occupational safety and health, efficient performance, preventing accidents, use of emerging work-related technology, and others. (ThanhTungPham -2023).

The dynamic and high-speed character of Construction projects requires companies to implement proactive training strategies to guarantee that their employees are able to respond to the new challenges in the most efficient way. More and more construction firms are establishing a dynamic team on every new project and tend to use external sources to cover labour fluctuations to reduce the risk, but gain more flexibility.

1.2 Digital Training

Traditional training methods are numerous, including coaching, practical sessions, and instructor-based training, among others. The digital era has made digital techniques more significant. They are more adaptable than the conventional methods. Business organizations will be able to become competitive and compete with others through the adoption of digital training (Meng Tian 2023). The construction sector is among the largest fields that have embraced digital methods to train its employees.

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This paper tries to comprehend the problems and the questions of the digital training of the blue-collar workers in the construction industry. It is anchored on the literature that exists on the topic.

2.0 Methodology

2.1 The title of the research paper is **"Digital Training-Issues and Concerns of Blue-Collar Workers in the Construction Industry"**. The work is founded on the approach of reviewing the literature and combining a number of real-world investigations of the cases of the construction industry in practice.

2.2 Significance of the study

The research is very modern in the age of digitalization. Our country has experienced an increase in the number of the construction industry. They have embraced the company's form of choice of organization. They are therefore running their business on a very professional and systematic line. The blue-collar workers are regarded as important human resources in the success and survival of the construction businesses. In this regard, it is very relevant to enhance the performance of the workers using the appropriate training methods. Blue-collar workers are usually trained using digital training methods such as robotic training, computer-based training, and video display.

The challenges of blue-collar workers can be solved with the help of digital training, which provides an effective solution for training blue-collar workers. It offers affordable, flexible learning opportunities. It includes interactive content, mobile accessibility, and targeted microlearning modules. Employers can close the skills gap and build a more skilled, safer, and more satisfied workforce. With technology still improving, the possibility of e-learning in blue-collar industries will continue to rise, which is a brighter future both for the workers and the industry (Simone 2024).

2.3 Statement of the problem

Welcoming the abilities of blue-collar workers is a long-term problem for construction companies. The fast-evolving situation in the Indian context and the growing need of customers have put pressure on the building sector to enhance the productivity of the workers. The industry, however, has many limitations to the successful implementation of digital training solutions. The paper will seek to establish and analyze these obstacles to give a picture of the constraints facing construction firms and how to incorporate digital training of their blue-collar employees.

2.4 Objectives of the Study

1. To examine different digital training methods and to discuss the tools that the construction industry uses to develop the competencies of blue-collar workers, such as modern technologies and learning platforms.
2. To determine how digital training affects the productivity of workers and their skill development.
3. To find out the construction industry issues in the implementation of digital training programs. This goal deals with effective transfer of digital training techniques, such as technological challenges, employee resistance, and the expenses of digitalization.
4. To determine the practical limitations and suggest the possible solutions to optimize the use of digital training, including the strategies that can be based on the analysis to help the construction companies adopt the approach of digital training successfully.

2.5 Data collection

The study is founded on a rich body of secondary data gathered through different sources such as peer-reviewed scholarly articles, theses, and research papers, therefore, giving a solid ground to the study and the findings provided in this research, as well as ensuring an adequate examination of digital training challenges among blue-collar employees in the construction sector.

3.0 The Role of Digital Training in Improving the Performance of the Blue-Collar Workers.

Digital technologies have also been gaining popularity in the construction industry, and the pace has been growing after the COVID-19 pandemic. Different digital skills have been discovered and classified into 35 major skills in a well-organized taxonomy. This taxonomy includes automation, digital data acquisition and integration, robotics, coding,

programming, design drawing and engineering, digital literacy and visualization, modeling and simulation, planning, and estimation. The new taxonomy will assist shareholders in making strategic plans in order to equip new members of the workforce with digital skills, which will result in a more effective way of digitalizing the construction industry (Fida Hussain Siddiqui-2023,). The implementation of digital training is of great value to construction enterprises and blue-collar employees. These advantages increase the productivity and efficiency of the workers and create a safe and more innovative working environment. With companies still investing in digital training, they will be able to better prepare the workforce with the skills they need to cope with the ever-changing technological advancements within the construction industry.

3.1 Quality Improvements

The great progress in the sphere of digital technologies introduces engineers and managers with a chance to enhance the quality standards in the sphere of construction. This paper recognizes how digital technology will be used in quality management in the present and future. The study question that was formulated by the researcher is as follows: Can digital technologies be an effective way of improving quality management in the building sector? The findings indicate that in order to improve their efficacy in managing defects at work, digital technology-based quality management is required, preconstruction defect prevention, post-completion of work testing, and compliance inspection with construction as the main areas of concern. (Hanbin Luo-2022).

3.2 Safety in the workplace

Among the industries is the construction sector, which has a major challenge of safety due to its complexity. The new tools and technologies are being considered by researchers to enhance safety management in this area. Building information modeling (BIM), virtual reality (VR), geographic information systems, and gaming tools are examples of digital technologies that are increasingly being used to increase construction safety.
These technologies assist in transforming traditional safety practices to more interactive and digital forms. As an example, BIM, VR, and AR enable safety managers to remotely visit construction sites, detect risk, and strategize on proactive safety. They also offer better training techniques, which enable the workers to be aware and better equipped to deal with possible risks.

Combining these tools, the construction sector will be able to achieve significant progress in the field of safety improvement and minimization of risks on the site. It is a good thing (Muneeb Afza 2021).

3.3 Reducing Training Costs

The digitization presents a huge chance of cost reduction to construction businesses, which is mainly through the enhancement of efficiency and hand productivity. With the help of sophisticated digital tools, it is much easier to manage data, reduce the time frame of the project, and automate manual work. Thereby, helping achieve significant cost savings. Online training is a more cost-efficient method of training skills. The cost can be scaled down, since the first scalable training programs are possible on the digital platform, and the participation is also subject to fluctuations. As an example, when a firm carries out a training program and there is a decreasing number of enrolments, the firm can bargain with the trainer to reduce the fee. On the other hand, when there is an increase in demand, the costs can increase as well. The training of workers with little infrastructure can be automated, and artificial intelligence can be used; the cost can be managed regardless of the number of people going through the training.

Financially, a reduction in cost will directly increase the profitability of the organization, which will result in a better bottom line. This is especially crucial for businesses that are operating in competitive markets under economic pressures. Besides the economic benefits, the implementation of a cost-efficient digital transformation strategy also contributes to the sustainability agenda of minimizing wastage and optimizing resource utilization. (Astreya 2023).

3.4 Flexibility for Workers

Online education has become a powerful training tool that is flexible and adaptive in most workplaces. Dooley (2002) carried out a study on 3 learning approaches- informal, formal, and blended learning- in Irish organizations, especially during the COVID-19 outbreak. The paper evaluated the impacts of the pandemic on workplace training and the

appropriateness of digital learning for employees of various generations and skill levels. The results indicate that digital learning is preferred because it allows learning in different styles and enhances access to training materials. This digitalization in learning has changed the learning processes of organizational cultures and enabled employees to participate in self-directed learning and the availability of learning to them, irrespective of their skills or age. This study is in conjunction with the overall goal of increasing the productivity of the workforce in the construction sector using digital learning in tandem with the Dooley research procedures. This would also enhance their mastery of their own pace as they keep up with the industry requirements.

3.5 Skill Upgradation and Productivity

After COVID, the adoption of digital tools and technologies to share information and communications increased significantly to a level of 66% (McKinsey,2020). Some of the digital technologies that were being employed included analysis of big data, HR processes, knowing the emotional state of laborers, skilled workforce, and information sharing live. The digital tools have the potential to further enhance transparency and introduce collaboration among the workforce, make them more productive, innovative, and empower the construction labor. Use of such digital tools increases efficiency and results in a more empowered and skilled workforce, increasing productivity within the construction sector.

4.0 Constraints in the Implementation of Digital Training

Digital training has several benefits, and it is very difficult to apply it in the construction sector. There are several problems that construction companies should resolve in order to achieve successful digital transformation. The major issues are as follows.

4.1 Change Management Process

Management process, especially in the process of digital transformation, can be a silent challenge. Digital training requires a properly organized management plan. Passenheim (2014) notes that the most frequent trappings of the change management process are the lack of awareness about their issues, poor communication, ineffective equity analysis of operational and strategic issues, unprofessional implementation of change management techniques, and the absence of control. Such challenges may also be experienced in the construction industry in the process of digital transformation. (Gamage, 2021). The construction industry sector has historical evidence that digital transformation usually triggers phase resistance to ineffective planning, insufficient stakeholder involvement, and the absence of continuous monitoring (Hallin et al., 2020). Change management is essential to break these barriers and facilitate an easy transition towards digital training. This comprises clear communication, extensive training, and logo support (Rivers, 2019).

4.2 Project Uniqueness

The construction project is never identical, and it always has its specific needs, schedules, and goals. It is challenging to implement standard digital training solutions because of this. The fact that this industry is decentralized, with different stakeholders having the potential to apply different tools when terminologies are in use, also makes it more difficult to implement digital training. The absence of uniform procedures of data collection, sharing, and information gathering is also a major challenge. (AlwazshahZaid-2024).

4.3 Unqualified workforce

The technologically skilled labor force is the key to effective use of digital technologies in the building industry. But studies indicate that the typical construction worker is over 40 years of age, the sector is already experiencing a shortage of skilled labour this combination of an ageing workforce and a shortage of trained workers poses a great challenge in the adoption of new technologies as the sector is still experiencing these workforce constraints, the skill development becomes more critical and increasingly resource intensive. (Manzoor, B., et al., 2021).

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4.4 High Stake

Digital technology adoption presupposes the investment in tools like software, training of employees, etc. Nevertheless, the benefits of digitalisation are usually long-term to be realised, and the economic benefits might not be short-term. Furthermore, the transition to new processes can disrupt the current operations and cause temporary difficulties. This is particularly challenging for small and medium-sized companies that usually have fewer financial resources to absorb such shocks. Durdyev, S., Mbachu, J. (2024).

4.5 Lack of Standard Procedures

Digitization is an important process in the realization of competitiveness in the construction industry. This is, however, only possible when the organizations partner with others who have the same level of digital expertise and standardized processes. This paper discusses the notion of digital partnership in construction and the view of a survey that was carried out among the professionals who are actively engaged in construction projects. The systematic procedure that was used to carry out additional research showed that digital partnerships are still underutilized in the industry. Nevertheless, when properly used, this kind of collaboration can bring considerable advantages such as enhancing competitiveness, better project performance, and fewer trust and investment risk concerns.
This study is an addition to the existing research that focuses on the opportunities of digital partnerships to assist construction companies, especially in developing nations, to adjust to the evolving digital environment by collaborating and sharing common practices. Aghimien, et al., 2020).

5.0 Suggestions for the effective implementation of digital training for construction workers

5.1 Implementing digital technology should be a rational and deliberate decision of organizations. (Newman et al.2020). The construction industry should not rush into digital technology. It involves a careful consideration of organizational goals, needs, and capabilities. Technology alliance with the industry goals is achieved deliberately and is maximally effective.

5.2 Small Organizations should select Digital tools that are simpler and less demanding (Dallasega et al., 2018). The SME construction companies are usually limited in resources, and they must select digital tools that can be adopted easily and are affordable. The use of user-friendly technologies can help in lowering the training load on the maintenance of the overall productivity without straining the organization.

5.3 Partnering with third parties can facilitate the effective implementation of digital training for blue-collar workers in the construction sector. (Aghimien, D., et al., (2020a)).

5.4 Effective management of Transformation: The phase of digital transformation should be systematic. It is essential to create awareness among workers regarding the benefits of digital training and to gain their confidence. (Isabel Fischer, 2023)

6.0 Articulation of learning outcome aspects based on the Review of the Literature.

6.1 The detailed literature review points to the considerable changes in the construction industry, especially the digitalization of the training methods. This transformation is in alliance with the larger global change that is geared towards improving productivity and efficiency by adopting technology.
6.2 The literature also emphasizes the increasing popularity of the digital training methods of blue-collar workers in the construction sector. The techniques are known to be flexible, scalable, and can fill the skill gap in geographically distributed workforces.
6.3 Several research studies describe the significant advantages of digital training of blue-collar employees, emphasizing the efficiency, safety, and productivity of the workforce. The cost savings and enhanced worker retention are other advantages that further boost the business case of digital training in the construction industry.

6.4 Lastly, the literature review shows the challenges and limitations that the construction industry encounters in the successful implementation of digital training. The most common obstacles are the lack of access to technology, change resistance, and the absence of standardization. Nevertheless, the literature also offers practical recommendations on how to address these challenges, such as systematic change management and the development of digital literacy among workers.

7.0 Conclusion

The Indian Construction industry is going through a lot of changes due to the fast pace of economic growth and the growing use of a corporate style of operations. The construction firms are crucial in the nation's infrastructure and real estate development. These market leaders are gradually embracing new technology and practices in order to remain competitive in a rapidly changing market. Among the most important factors of this transformation is the enhancement of the productivity of the workforce by means of efficient digital training programs. The construction sector is very labour-intensive and depends heavily on the efficiency and expertise of the blue-collar workers. Digital training methodologies, which have been discussed in different sections of the paper, have become a common required approach to improving the competencies and safety of the workforce. Online training enhances productivity and other major facets such as safety, teamwork, and job satisfaction. The literature review and research done in this paper have also indicated the many advantages of digital training in breaking the traditional barriers, such as the expense of training, employee reluctance to change, and the absence of standardized practices. Strategic change management and digital partnerships can help manage the challenges that construction companies face in implementing digital technologies, especially in terms of adapting to the specific requirements of various projects. With these insights, businesses will be able to navigate the intricacies of digital transformations in a better way. To sum up, blue-collar training in the digital environment is a great chance to raise worker productivity and improve the performance of construction enterprises, and gain a competitive edge in a challenging industry.

8.0 Scope for Further Research Work

This study has discussed the changing nature of the construction sector and how digital training is the key to improving productivity and skill sets of blue-collar employees. Although the present study has been informative, it has a lot of room to be investigation. Future research may increase the scope of the present research by addressing the direct effect of digital training on the upgradation of skills and improvement of performance of blue-collar workers in the construction sector. This can be done by obtaining primary data among the workers and the construction companies, well-structured surveys or interviews can be used to obtain detailed first-hand information. The data may be processed with the help of sophisticated statistical tools in order to evaluate the success of digital training programs based on various parameters, including the efficiency of workers, their safety, and the overall project performance. In addition, the study may be extended in the future to look at the long-term impacts of digital training on the retention of the workforce and its effectiveness in closing the technology gap among older workers in this sector. A more detailed picture of the role of digital training in creating competitiveness and innovation would be obtained by conducting comparative studies of companies that have already fully entered the digital transformation process and companies that have not yet adopted this practice.

The other potential future research is the creation of standard digital training frameworks that various construction projects can apply. The possibility of collaborating with different training providers and certification programs provides more information on scalability and sustainability. To sum up, future studies need to create a more detailed, fact-based picture of the issues and possibilities that digital training brings to the construction sector. Future studies may significantly contribute to the present digital era construction worker revolution by broadening the reach to real-life case studies, longitudinal analysis, and comparative frameworks.

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