



Addressing the Challenges of Knowledge Transfer in Employee Training: Insights from the Agricultural Sector

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Abstract

This study aims to examine the challenges of transferring skills acquired through employee training, particularly in the context of Algeria's evolving economic and industrial landscape. Despite significant investments in training programs, the application of learned skills remains limited, as trainees often struggle to implement their knowledge in real-world scenarios. The research will explore key factors affecting skill transfer, including self-efficacy, motivation, perceived control, workplace support, and the professional environment. The study also proposes developing two diagnostic tools to enhance skill transfer, with a specific focus on the agricultural sector. By utilizing both qualitative and quantitative methods, the research will offer practical recommendations to improve the effectiveness of training programs and ensure their successful implementation.

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1. Introduction

In today's rapidly evolving global economy, businesses face increasing pressures to remain competitive and adaptable. This transformation is driven by factors such as globalization, technological advancements, and shifts in consumer demand. As these changes reshape the business landscape, businesses must continuously adapt by equipping their workforce with new skills. Employee training is often seen as a critical tool in this regard, as it is designed to enhance employees' abilities and ensure that they are prepared to meet the demands of modern workplaces.

However, despite the massive investment in employee training programs, organizations often struggle with the effective application of the knowledge and skills gained through training. Many studies have highlighted a significant gap between the theoretical knowledge acquired in training and its practical application in the workplace. This issue is known as the "transfer of learning" problem, and it remains one of the most significant challenges faced by businesses today.

Research has shown that factors such as self-efficacy, motivation, perceived control, and the work environment play crucial roles in determining the success of this transfer process. Despite the acknowledged importance of these factors, there has been little focus on developing concrete solutions to enhance skill transfer,

particularly in industries undergoing rapid transformation, such as agriculture.

The core issue lies in the inefficiency of skill transfer, despite substantial investments in training. Why do many employees, after completing training programs, struggle to apply the skills they have learned? What are the internal factors—such as motivation and self-confidence—and external factors—such as organizational support and the work environment—that impact this process? How can businesses bridge the gap between theoretical learning and practical application, ensuring that training programs yield measurable, real-world results?

This article aims to explore the key factors influencing the effectiveness of skill transfer in vocational training. Drawing on both theoretical frameworks and recent research, it proposes practical tools and strategies to enhance the transfer of learning, especially in sectors facing rapid change, like agriculture. Additionally, the article will highlight innovative training methodologies and organizational strategies that can help facilitate the application of skills in the workplace, thereby maximizing the impact of training programs.

2. The Context of Employee Training in a Transforming World

Globalization and technological advancements have significantly altered the operational landscape for businesses worldwide. According to Porter (1990),

globalization has led to increased competition and greater interdependence among markets, forcing organizations to constantly adapt to shifting global demands. Similarly, technological innovations such as artificial intelligence, robotics, and digitization have redefined not only production processes but also the skills required from employees (Brynjolfsson & McAfee, 2014). In a world where markets are increasingly interconnected, businesses must demonstrate agility and responsiveness to new challenges. These technological advancements, while driving innovation, also pose challenges related to reskilling and the ongoing need to update employees' competencies (Frey & Osborne, 2017).

In this context, globalization drives organizations to prioritize global competitiveness by investing heavily in employee training programs. These investments aim to ensure that employees are adequately prepared for the ever-evolving demands of their respective industries. As businesses strive to remain competitive, there is a growing recognition that training must not only address current needs but also anticipate emerging trends in technology and market demands (Becker, 1993). As a result, companies continuously review and revise their training programs to ensure that employees' skills are aligned with these rapidly changing environments (Kaufman, 2007).

2.1 Specific challenges in Transforming Sectors (Agriculture)

Both industrial and agricultural sectors are particularly impacted by these economic

and technological transformations. In the industrial sector, the rise of automation and Industry 4.0 technologies has revolutionized production chains and management methods. Workers are required to acquire new technical skills to engage with increasingly sophisticated machinery and to interpret and leverage the data generated by these technologies (Harrison et al., 2017). As organizations embrace automation, the demand for specialized technical skills has increased, necessitating continuous and updated training programs (Arntz, Gregory, & Zierahn, 2016). These changes demand not only adjustments in training content but also the adoption of more flexible and adaptive methods to meet evolving workforce requirements (Bessen, 2019).

Similarly, in agriculture, new technologies such as precision farming, drones, and smart irrigation systems are fundamentally altering agricultural practices. These innovations are pushing the need for specialized skills that aim to increase both productivity and sustainability. According to Zuo et al. (2018), agricultural workers must adapt to complex technological systems that optimize resource use and improve crop yields. The shift toward digital tools in agriculture emphasizes the importance of skills in data analysis, technology maintenance, and system integration, which are often not covered by traditional agricultural training programs (Pardey et al., 2016). These changes, however, come with challenges, particularly in rural areas where access to training programs and modern

technologies remains limited (Lipton, 2017).

Despite these challenges, the agricultural sector remains vital to many national economies, including Algeria, where it plays a key role in ensuring economic stability and food security (El-Saidi et al., 2020). The effective transfer of skills in these sectors is, therefore, crucial, not only for improving productivity and yields but also for making these industries more resilient to global challenges, including climate change and the economic pressures brought about by globalization (FAO, 2017). To address these challenges, it is essential to develop targeted training strategies that consider the specific needs of workers in these sectors, ensuring they are equipped with the skills necessary for the future.

2.2 Key factors in skills transfer in an organizational environment

The transfer of learning refers to the ability of individuals to apply skills, knowledge, and competencies learned in one context (such as training programs) to another context (such as the workplace). For this transfer to be successful, several factors must be in place.

- Self-Efficacy and Employee Motivation

Self-efficacy, as defined by Bandura (1997), refers to an individual's belief in their ability to perform tasks and achieve goals. In the context of training, self-efficacy plays a critical role in determining whether employees will be able to transfer

what they have learned to their work environment. Employees who believe in their ability to apply new skills are more likely to do so, as they are more confident in overcoming obstacles and challenges that may arise.

Motivation is another essential factor influencing the transfer of learning. According to Deci and Ryan's (1985) Self-Determination Theory, motivation can be intrinsic or extrinsic. Intrinsic motivation is driven by internal factors, such as personal satisfaction and the desire to master new skills, while extrinsic motivation is influenced by external rewards, such as promotions or recognition. Both types of motivation play a role in encouraging employees to apply what they have learned in training. Motivated employees are more likely to seek opportunities to use their new skills and continuously improve their performance.

- The Role of Organizational Support and Company Culture

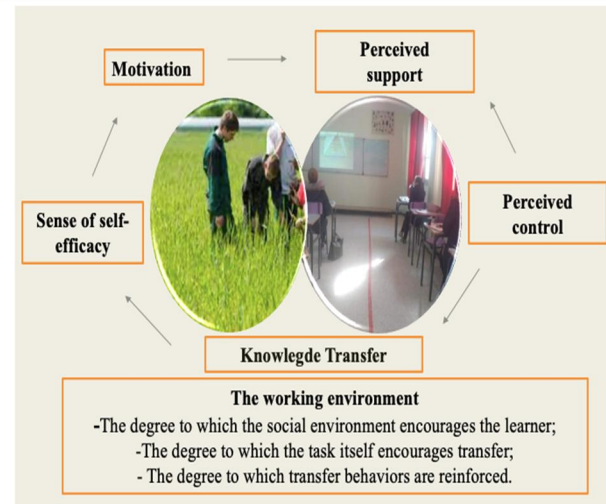
Perceived support refers to the extent to which employees feel that their organization provides the necessary resources, encouragement, and assistance to apply what they have learned. As emphasized by Haccoun and Saks (1998), support from supervisors, managers, and colleagues is crucial for the successful transfer of skills. Without sufficient support, employees may struggle to implement what they have learned or may feel that their efforts are undervalued, which can lead to a lack of motivation to apply new skills.

The work environment plays a significant role in determining whether skills learned in training are successfully transferred to the workplace. A supportive work environment provides the necessary resources, tools, and opportunities for employees to practice and apply their new skills. This includes access to technology, collaborative workspaces, and a culture that encourages innovation and experimentation. As discussed by Laroche and Haccoun (1999), employees are more likely to apply what they have learned when the environment is conducive to the practical use of new skills.

- Organizational Culture and Training Design

Lastly, organizational culture and training design are essential factors in the transfer of learning. Organizations that value continuous learning and innovation are more likely to create an environment where employees feel encouraged to apply new skills. Furthermore, training programs that are well-structured, relevant to employees' roles, and aligned with organizational goals are more effective in ensuring that employees can successfully transfer what they have learned to their jobs.

Fig 1: Factors that influence transfer of knowledge (Laroche and Haccoun, 1999, Haccoun and Saks, 1998) (Rouiller and Goldstein, 1993).



Source: auteur

3. Methodology and Results

This study aimed to investigate the factors influencing the transfer of learning in vocational training programs for employees, with a particular focus on the employed. A total of 120 employees participated in the survey, while 15 managers and training directors were interviewed to provide qualitative insights into the challenges and barriers faced during the transfer process agricultural and industrial sectors. To achieve this goal, both qualitative and quantitative research methods were

3.1 Research Design

The research adopted a mixed-methods approach, utilizing both surveys and interviews to gather data. The study was designed to evaluate the effectiveness of employee training programs in promoting the transfer of learning, with a focus on understanding the key factors that either facilitate or hinder this transfer.

3.2 Instrument 1: Diagnostic Grid for Learning Transfer

The first tool used in this study was a diagnostic grid designed to assess the

various factors influencing the transfer of learning. This grid included a set of questions related to key factors such as self-efficacy, perceived support, motivation, and the work environment.

Sense of Self-Efficacy: An employee's belief in their ability to perform tasks and apply newly acquired skills in the workplace.

- **Motivation:** The intrinsic and extrinsic factors that drive employees to apply what they have learned in their work environment.
- **Perceived Control:** The degree to which employees feel they have control over their work environment and tasks.
- **Perceived Support:** The level of support employees feel they receive from their supervisors, colleagues, and the organization as a whole.
- **Work Environment :** The conditions, tools, and resources available in the workplace that facilitate or hinder the application of new knowledge.

These factors were identified based on existing research (Haccoun & Saks, 1998; Laroche & Haccoun, 1999) and were incorporated into the grid to provide a comprehensive framework for assessing the conditions necessary for successful learning transfer.

- Instrument 2 : Diagnosis of Knowledge Transfer Potential

The second tool focuses on diagnosing the potential for successful **knowledge transfer**. This tool is designed to assess the factors within the organization and the work environment that influence the likelihood of training outcomes being applied effectively in practice. The instrument evaluates:

- The alignment between training content and the actual tasks employees are expected to perform.
- The readiness of the workplace to support the implementation of new skills.
- The involvement of managers and supervisors in encouraging and facilitating the use of newly acquired skills.
- By analyzing these factors, the study aims to provide clear recommendations on how training programs can be tailored to better support the transfer process

3.2 Quantitative Data Collection

To gather quantitative data, the study utilizes **surveys and questionnaires** administered to both trainees and trainers. These tools are designed to capture participants' perceptions of the effectiveness of the training and the applicability of the skills learned in their day-to-day work. The surveys cover several key areas :

- **Self-reported effectiveness** of training and the perceived relevance of the training content to real-world tasks.
- **Levels of motivation and confidence** among trainees regarding the application of new skills.
- **Perceived organizational support** and the extent to which managers and supervisors facilitate or hinder the transfer process.
- **Job satisfaction** and the perceived impact of the training on employees' work performance.

In addition to the surveys, **interviews with trainers and managers** will be conducted to gain deeper insights into the organizational practices that support or impede the transfer of learning. These qualitative data will complement the quantitative findings and offer a more nuanced understanding of the factors that influence the transfer process.

The quantitative data will be analyzed using statistical methods to identify correlations between the factors assessed in the diagnostic tools and the success of knowledge transfer. This analysis will help determine which factors are most strongly associated with successful application of training outcomes and will provide a basis for practical recommendations for improving training programs.

The quantitative data collected from the diagnostic grid were analyzed using descriptive statistics, including mean scores and standard deviations, to identify trends and patterns in the factors that influence the transfer of learning. Factor analysis was also performed to determine the interrelationships between different factors and identify the most critical ones for the transfer process.

Qualitative data from the interviews were analyzed using thematic analysis, which involved coding the data and identifying recurring themes related to barriers and enablers of successful skills transfer.

4.Expected Outcomes and Practical Implications

The primary data analysis process consisted of descriptive statistics, factor analysis, and correlation analysis to identify patterns and relationships between the factors influencing skills transfer. The data was analyzed using statistical software (e.g., SPSS) to derive insights that could inform improvements in training programs and enhance the practical application of learning.

4.1 Descriptive Analysis of Key Transfer Factors

The results from the Diagnostic Grid for Learning Transfer revealed the average ratings for the five key factors that impact the success of skills transfer. These factors were evaluated on a scale of 1 to 10, with 10 representing the most favorable conditions for transfer.

Table 1: Factors associated with the ability of stakeholders to successfully transfer knowledge

Transfert Factors	Average obtained (%/10)
Sense of self-efficacy	9.82
Perceived support	6.52
Perceived control	5.64
Motivation	5.68
work environment	4.22

Source : auteur

4.2 Implications of Results and Recommendations for Enhancing Knowledge Transfer

The diagnostic grid results provide valuable insights into the key factors that influence the effectiveness of knowledge transfer from training programs to the workplace. By analyzing these factors and their associated scores, it becomes evident that while certain elements, such as self-efficacy, are strong, other areas—especially the work environment and motivation—require focused improvements. Below, we outline the implications of these results and provide recommendations for enhancing the transfer of learning.

1. Sense of Self-Efficacy

Implication: The high score for self-efficacy (9.82/10) suggests that employees have a strong belief in their ability to apply the skills learned during training. According to Bandura (1997), self-efficacy is crucial for motivating individuals to take action and persist in the face of challenges. Positive feedback and recognition of progress during and after training can further strengthen employees' confidence in their skills.

Recommendations:

- **Provide Positive Feedback:** To sustain high levels of self-efficacy, it is essential to offer continuous positive feedback during training and once employees begin applying their skills on the job. This feedback should focus on progress, even if small, to reinforce the belief that they can succeed.

- **Encourage Self-Reflection:** Incorporating opportunities for employees to reflect on their achievements and challenges during training can help build a deeper sense of self-efficacy.

2. Perceived Support

- **Implication :** The moderate score for perceived support (6.52/10) indicates that employees feel some level of support from their managers and colleagues but that there is potential for improvement. According to Laroche and Haccoun (1999), a structured post-training support system is essential for bridging the gap between training and on-the-job application.

Recommendation :

- **Post-Training Support Structures:** Set up structured post-formative meetings where employees can discuss challenges, share experiences, and receive guidance on applying their new skills. These meetings should involve managers, supervisors, or mentors who can provide constructive feedback and address any obstacles to skill application.
- **Establish Peer Support Networks:** Encourage collaboration and mentoring among employees, where experienced workers can provide ongoing support to those who have recently completed training.

3. Work Environment

- **Implication:** The work environment received the lowest score (4.22/10), which highlights a

significant barrier to the successful transfer of skills. As suggested by research on knowledge transfer, employees need a supportive environment that encourages the practical application of their learning. Key factors influencing the work environment include access to resources, organizational culture, and the alignment between training content and job tasks.

Recommandation :

- **Eliminate Barriers to Learning Application :** Focus on addressing obstacles that prevent employees from applying their skills effectively. This can involve removing or reducing workplace barriers such as outdated equipment, insufficient time to perform tasks, or unclear job expectations.
- **Provide Opportunities for Practice :** Create an environment where employees can regularly practice new skills. For instance, if the training involves technical skills, allocate specific time for hands-on tasks where employees can use those skills in real-world scenarios.
- **Modify Work Conditions :** As part of the effort to improve the work environment, consider modifying work conditions or structures that hinder skill application, such as reducing rigid hierarchies, improving team collaboration, or providing additional resources to employees.

4. Motivation

Implication : The motivation score (5.68/10) is moderate, indicating that while employees may have some intrinsic drive, there is room for improvement. Motivation plays a critical role in ensuring that employees apply their training in the workplace. According to Haccoun and Saks (1998), motivation can be enhanced by involving learners in the preparation of the training program and promoting the course through effective communication strategies.

Recommandation :

- **Involve Employees in Course Preparation:** Engage employees in the planning and preparation stages of training to ensure that the content aligns with their needs and interests. This involvement can increase their intrinsic motivation to learn and apply the new skills.
- **Promote Training Through Communication :** Implement a communication strategy that highlights the benefits of the training and emphasizes its relevance to employees' roles. Regularly remind employees about the value of the training and how it can positively impact their careers and job satisfaction.
- **Incentivize Skill Application:** Introduce mechanisms such as performance rewards or recognition programs that incentivize the application of new skills in the workplace. This could include formal acknowledgment, bonuses,

or other tangible rewards for employees who successfully implement new skills.

5. Key Elements for Facilitating the Transfer of Learning

To facilitate the transfer of learning, it is crucial to address several key elements that influence how effectively employees can apply their training on the job. These elements are integral to overcoming barriers to knowledge transfer and ensuring that training leads to tangible improvements in workplace performance.

- **Level of Learning Attained:** Ensure that training programs are designed to meet the specific needs and competencies required in the workplace, with clear learning outcomes.
- **Barriers to Applying Learning:** Identify and eliminate any barriers, such as a lack of resources, poor management support, or insufficient time to apply new skills.
- **Opportunities to Apply Learning:** Provide ample opportunities for employees to use their new skills in their daily tasks and projects.
- **Expectations of Training Application:** Set clear expectations from the outset that the goal of training is to improve job performance and that employees are expected to apply their learning in their roles.
- **Constructive Feedback on Skill Application:** Offer ongoing feedback on how employees are applying their training. Positive

reinforcement, as well as suggestions for improvement, can help ensure the continued success of skill transfer.

- **Reinforcement of New Behaviors:** Reinforce new behaviors by integrating them into performance evaluations, encouraging supervisors to recognize and reward the application of new skills.
- **Providing Opportunities for Practice:** Ensure that employees have time and space to practice what they've learned. This could be done through job rotations, special projects, or dedicated practice time.
- **Modifying the Work Environment:** Continually assess and improve the work environment to make it more conducive to the application of new skills. This could involve making changes to workflow, team structures, or resource allocation.

- Qualitative Insights from Interviews

The interviews with training directors and managers revealed several important insights:

1. **Lack of Follow-up Support:** Many managers noted that employees often do not receive the ongoing support they need after training. While initial training is effective, the lack of follow-up sessions and feedback limits the application of new skills.
2. **Inadequate Opportunities for Practice:** A recurring theme was the lack of opportunities for employees

to practice their new skills in real-world scenarios, which limits the transfer process.

3. **Environmental Barriers:** Several participants identified structural barriers, such as outdated technology, inadequate resources, and a lack of collaboration, as major obstacles to skills transfer.

The results of the diagnostic grid highlight both strengths and areas for improvement in the transfer of learning from training to practice. By addressing the factors of self-efficacy, perceived support, motivation, and the work environment, organizations can enhance the effectiveness of their training programs. Practical, actionable recommendations based on these findings will contribute to improving the overall success of vocational training and the application of newly acquired skills in the workplace.

Conclusion

This study provides valuable insights into the factors that influence the transfer of learning in employee training programs, particularly in the agricultural and industrial sectors. The results demonstrate that self-efficacy plays a crucial role in the successful transfer of skills, but organizational support, motivation, and the work environment are also critical components of this process.

To maximize the transfer of learning, organizations must focus on creating a

supportive environment that encourages continuous learning and provides the necessary resources for employees to apply their new skills. This includes offering follow-up support, providing opportunities for practice, and fostering a culture that values innovation and skill development.

Future research could explore the effectiveness of different training methodologies and interventions in enhancing the transfer of learning, as well as the role of leadership in creating a supportive environment for skills application. By addressing the barriers identified in this study, organizations can improve the impact of their training programs, leading to increased productivity and enhanced organizational performance.

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