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Reskilling and Employee work Adaptability Under Automation: Theoretical Foundations, a Conceptual Model and Managerial Implications

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Abstract
Automation changes task requirements and creates a need for existing employees to acquire and apply new skills. This article examines how reskilling practices may support employee work adaptability and the conditions under which direct supervisor support can strengthen this process.
A selective narrative review integrates the literature on training transfer, adaptive performance and digital work design. Institutional reports provide context for technology-related skill change. The study is conceptual; it does not collect primary data or estimate empirical effects.
The analysis proposes a model in which training transfer mediates the relationship between reskilling practices and adaptive performance, while direct supervisor support moderates the relationship between reskilling practices and transfer. Five propositions, prospective measurement domains and a future empirical design are developed. Manufacturing enterprises in northern Vietnam are identified as a possible testing context, rather than a population for which findings have already been established.
The framework suggests evaluating reskilling beyond attendance and completion by examining learning attainment, workplace application and adjustment to changed task demands. Its managerial implications concern task-based training, protected practice opportunities, supervisor involvement and fair access to reskilling. Multiwave, multisource research is required to test the propositions and compare alternative explanations.

Keywords: Reskilling, Automation, Training transfer, Adaptive performance, Supervisor support

1. Introduction

Automation creates a human resource management problem at the level of tasks: employees may need to perform a different combination of activities even when their job title remains unchanged. Acemoglu and Restrepo explain technological change through the displacement of existing tasks and the creation of new tasks (Acemoglu and Restrepo, 2019) [1]. This distinction prevents the assumption that all automation produces the same employment consequences. For human resource managers, the relevant question is which remaining or newly assigned tasks require employees to learn and apply different skills.

Recent institutional publications reinforce the relevance of this question. The OECD discusses changing skill requirements associated with artificial intelligence and the role of training in responding to them (OECD, 2023). The World Economic Forum reports employers' expectations about skill change and workforce training during 2025–2030 (World Economic Forum, 2025) [14]. These publications provide context rather than causal evidence that a particular reskilling program improves an individual employee's adaptability. Their findings should also not be treated as representative estimates for Vietnamese manufacturing workers.

Technology adoption is accompanied by decisions about who performs which tasks, what discretion workers retain, and how performance is monitored. Parker and Grote place work design at the center of understanding the effects of digital technologies (Parker and Grote, 2022) [11]. Consequently, an employee who completes training may still lack access to the equipment, assignments, or supervisory assistance needed to use the new skills. A course completion certificate cannot establish that changed work requirements have been met.

The training transfer literature offers an explanation for this gap. Baldwin and Ford distinguish the application and maintenance of learning at work from learning itself (Baldwin and Ford, 1988) [2]. Blume and colleagues further show that transfer is associated with trainee characteristics and the work environment, and that measurement choices affect reported relationships (Blume *et al*., 2010) [4]. Meanwhile, adaptive performance concerns behavior in response to new or altered demands, rather than the successful repetition of an unchanged task (Pulakos *et al*., 2000; Jundt *et al*., 2015) [12, 9]. These perspectives need to be linked carefully because applying a trained procedure and adapting to an unfamiliar situation are related but different outcomes.

This article asks: how might employer reskilling practices support employee work adaptability under automation, and when might direct supervisor support strengthen that relationship? It develops a model in which training transfer mediates the relationship between reskilling practices and adaptive performance, while supervisor support moderates the first stage. The intended contribution is a bounded integration of established concepts, not a claim that training, support, or adaptability has never been studied. Manufacturing enterprises in northern Vietnam are proposed as a future testing context; no local empirical findings are reported.

2. Literature Review and Theoretical Foundations

2.1. Reskilling and Technology-Related Task Change

For this article, reskilling refers to employer-organized learning intended to prepare existing employees for substantially changed tasks or a different role. Upskilling deepens proficiency in an existing set of tasks. In practice, a program can contain both, so its classification should depend on the documented task transition rather than the label used by a training provider. General computer literacy without an identified change in work responsibilities would not by itself qualify as the focal reskilling intervention.

The proposed construct comprises task-based needs assessment, content aligned with changed responsibilities, realistic practice, and feedback during learning. Training research emphasizes that effectiveness depends on decisions made before, during, and after instruction (Salas *et al*., 2012) [13], and its historical development extends beyond isolated classroom events (Bell *et al*., 2017) [3]. The present framework nevertheless keeps supervisor support and opportunities to apply learning separate from the reskilling-practices measure. Otherwise, including support in both the predictor and moderator would make their roles conceptually redundant.

A hypothetical example is a production worker moving from manual inspection to interpreting machine-generated quality alerts. Relevant reskilling could address alert interpretation, verification procedures, escalation decisions, and coordination with technicians. The intervention is not simply an introduction to the software interface. This distinction allows researchers to connect the training content to a defined change in tasks, while remaining attentive to safety requirements and the employee's permitted decision authority.

2.2. Training Transfer as The Link Between Learning and Work

Training transfer is defined here as the application and continued use of skills acquired in the focal reskilling program. It concerns what the employee does after instruction, not attendance, satisfaction with the trainer, or a classroom test score. Reviews identify realistic learning environments, support, opportunities to perform, and follow-up among relevant conditions (Grossman and Salas, 2011) [7, 13]. Ford and colleagues also treat transfer as a continuing research problem with unresolved questions (Ford *et al*., 2018) [6]. Neither publication establishes that the present automation-specific mediation model is already validated.

Transfer indicators should remain close to identifiable trained skills. For the hypothetical inspection worker, an indicator might record whether the employee follows the newly taught alert-verification procedure when performing the assigned task. Learning attainment remains an additional stage: a person cannot reliably transfer a skill that was never acquired. The model compresses this earlier stage for parsimony, so future research should measure learning attainment rather than assume it from program completion.

2.3. Work Adaptability and Adaptive Performance

Work adaptability is operationalized as demonstrated adaptive performance: effective behavioral adjustment when task demands change. It is not defined as a stable personality trait, generalized willingness to embrace technology, or career adaptability across occupations. Pulakos and colleagues provide a taxonomy of adaptive performance (Pulakos *et al*., 2000) [12]. Subsequent reviews and scale development offer foundations for defining and measuring the outcome (Jundt *et al*., 2015; Charbonnier-Voirin and Roussel, 2012) [9, 5]. A manufacturing study must select dimensions relevant to its actual task changes instead of assuming that every dimension is equally applicable.

The distinction from transfer is essential. Transfer can mean using a trained verification sequence; adaptation can mean responding appropriately when a new combination of machine alerts requires a changed sequence, coordination, or escalation. The adaptive response may extend beyond the exact practiced scenario, but it must remain within authorized and safe procedures. Researchers should avoid questionnaire items that ask essentially the same behavior twice under different construct names. Otherwise, an apparent mediation effect could reflect overlapping measures rather than an explanatory process.

2.4. Supervisor Support and Theoretical Integration

Direct supervisor support is defined as task-specific assistance surrounding the implementation of newly learned skills. Illustrative behaviors include protecting practice time, providing access to required resources, offering feedback, and helping resolve barriers. It should be distinguished from liking one's supervisor, perceived organizational support, and broad leadership style. The proposed moderator concerns support for the focal reskilling transition, not every aspect of the employment relationship.

Support is proposed to affect whether a learning opportunity becomes usable at work. A supervisor who expects immediate full-speed output while withholding access to the new task may prevent application despite a well-designed course. Conversely, coaching and a staged assignment may facilitate it. These are proposed mechanisms, not empirical observations from Vietnamese firms. Support does not authorize unsafe experimentation; practice with consequential errors should occur in controlled settings.

Taken together, these literature streams provide a process explanation rather than a single all-purpose theory. Training transfer explains how acquired skills become workplace behavior; adaptive performance specifies adjustment to altered demands; and work design identifies whether task assignments and resources permit that adjustment. The resulting framework separates instructional practices from transition-specific supervisor support, so that support is not simultaneously built into both the predictor and the moderator. This integration yields testable propositions while retaining the distinct boundaries of each construct.

3. Research Methodology

3.1. Review Approach and Source Selection

The article uses a selective narrative review for conceptual model development. Following Jaakkola's discussion of conceptual research design, the role of each literature stream is made explicit (Jaakkola, 2020) [8]. Training transfer supplies the central process explanation, adaptive performance supplies the outcome definition, and digital work design supplies contextual boundaries. Institutional reports establish the practical relevance of reskilling without substituting for evidence about individual causal mechanisms.

The source base comprises foundational and review publications on training, transfer and adaptive performance, research on digital work design, and OECD and World Economic Forum reports. Sources were selected for their relevance to construct definitions, explanatory mechanisms and technology-related task change. The cited publications span 1988–2025. This is a selective narrative synthesis, without exhaustive database coverage, duplicate screening, a registered protocol or a pooled effect estimate. It should therefore be interpreted as conceptual model development rather than a systematic review.

3.2. Analytical Procedure and Conceptual Framework

The analysis compares definitions, separates organizational practices from employee behavior, and identifies an explanatory sequence from reskilling provision to workplace application and then adaptation. Existing findings support the plausibility of that sequence, but do not establish the complete proposed model. Five propositions therefore express relationships to be tested rather than conclusions already demonstrated in the selected national or industrial setting.

The analytical procedure distinguishes the organizational provision of reskilling, the application of learned skills and behavioral adjustment under changed demands. It then specifies the proposed links and the role of supervisor support. Workplace examples are hypothetical. No employee survey, interview dataset, personnel records or statistical results are reported. Figure 1 summarizes the proposed relationships; the measurement plan and empirical procedures in Section 4 remain proposals for future research.

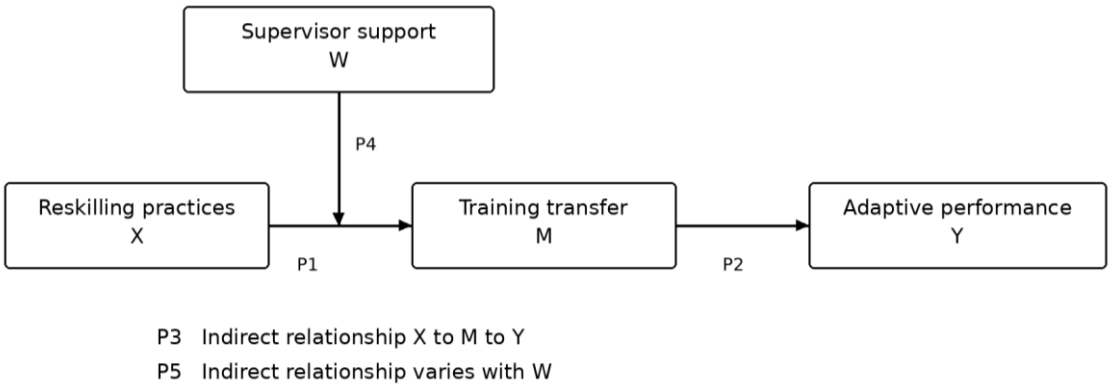


Fig 1: Proposed first-stage moderated mediation model

Source: Authors' conceptual synthesis. Arrows represent propositions, not estimated effects. A future statistical model should also include the direct X–Y path and the main effects of supervisor support.

4. Findings and Discussion

The findings of this study are conceptual outputs: construct distinctions, five propositions and an empirical research agenda. They are not observations of Vietnamese enterprises or evidence that the proposed effects have already been demonstrated.

4.1. Reskilling, Transfer and Adaptive Performance

The first proposed link concerns the alignment between learning and its intended use. A program tied to specified new responsibilities should make it easier for employees to recognize when the trained skill is relevant. Practice and feedback may also reduce uncertainty about how to perform the new procedure. This reasoning is consistent with transfer scholarship (Baldwin and Ford, 1988; Grossman and Salas, 2011) [2, 7, 13], but the relationship can be weakened by poor learning attainment or the absence of post-training task opportunities. The model therefore applies primarily to employees assigned to use the focal skills.

P1. Higher-quality reskilling practices are positively associated with subsequent transfer of the skills taught in the focal program.

Repeated workplace application is proposed to help employees connect new knowledge with operational conditions. As workers use the focal skills, they may become better able to interpret changed information and adjust their behavior when demands vary. However, rigid repetition

alone need not improve adaptation. The expected relationship is strongest where training teaches relevant decision principles and application provides informative feedback. The proposition concerns appropriate adjustment to changed requirements, not compliance with any unexamined automated recommendation.

P2. Greater training transfer is positively associated with subsequent adaptive performance under changed task demands.

Together, these links describe a process in which reskilling contributes to adaptation partly through workplace use. A positive direct association between training and adaptation would not by itself establish this mechanism. Alternative routes, including learning attainment and task-specific confidence, may exist and should be considered in empirical comparisons. Full mediation is not assumed.

P3. Training transfer mediates a positive relationship between reskilling practices and subsequent adaptive performance.

4.2. Supervisor support and the conditional indirect relationship

Supervisor support is placed on the first stage because the immediate managerial issue is whether employees can apply what was taught. The supervisor may arrange suitable assignments, remove access barriers, or help interpret feedback. These actions could strengthen the relationship between program quality and transfer. Support may also directly affect transfer and adaptation; those main effects should be estimated so that an interaction is not mistaken for a general supportive environment.

P4. The positive relationship between reskilling practices and training transfer is stronger when direct supervisor support for the focal transition is higher.

If the first-stage relationship varies with support and transfer is related to adaptation, the indirect relationship should also depend on support. This conditional process distinguishes the model from a simple association between training attendance and reported adaptability. It remains possible that support has little additional influence where resources are guaranteed and tasks are tightly standardized; such a finding would help establish the framework's limits.

P5. The positive indirect relationship between reskilling practices and adaptive performance through training transfer is stronger at higher levels of direct supervisor support.

4.3. Measurement and prospective empirical examination

Table 1 translates the model into prospective measurement domains. These domains are not a validated questionnaire. Existing adaptive performance scales provide a starting point (Charbonnier-Voirin and Roussel, 2012) [5], but translation, contextual adaptation, pilot testing and discriminant-validity assessment are necessary. Training practices may require a composite or separate dimensions rather than a set of interchangeable reflective indicators.

Table 1: Prospective measurement domains

Construct	Measurement domain	Preferred evidence
Reskilling practices	Alignment with changed tasks, needs assessment, relevant practice, instructional feedback	Training records and employee assessment
Training transfer	Application and sustained use of identifiable skills taught in the focal program	Behavior logs or structured supervisor ratings
Adaptive performance	Appropriate adjustment to changed task demands beyond exact practiced routines	Independent observation or anchored ratings
Supervisor support	Practice time, resource access, task-specific coaching and barrier removal	Employee report and documented support actions

Measurement should separate use of a learned procedure from adjustment to a genuinely changed situation. An assessor could observe routine use for transfer and a safely simulated variation for adaptation. Such observations should not expose workers to operational hazards. Illustrative domains in Table 1 must not be described as a published validated scale.

An initial field study could recruit employees from several manufacturing enterprises in northern Vietnam with documented technology-related task changes and a focal reskilling program. Eligibility should be verified using task descriptions and training materials. Power analysis should account for the interaction, clustering within supervisors and firms, and expected attrition; the framework alone does not justify a fixed sample size.

A baseline wave should measure prior skill, previous task experience, and initial adaptive performance. A second wave could capture reskilling practices, learning attainment, and transition-specific supervisor support. A third could assess transfer after employees have had reasonable opportunities to apply learning; a later wave could assess adaptation under changed demands. The intervals should follow actual training and production cycles rather than an arbitrary common schedule.

Analyses should first examine measurement quality and distinctiveness, then estimate the direct, indirect, and interaction relationships. Multilevel analysis or appropriate cluster adjustments may be required because workers share supervisors and enterprises. Conditional indirect relationships can be evaluated with uncertainty intervals using a method appropriate to the clustering structure. Selecting partial least squares or covariance-based structural equation modeling should follow the measurement assumptions and research purpose, not a presumption that either guarantees publishable results.

Temporal separation reduces some sources of bias but does not establish causality. Initial ability, selection into training, and the intensity of technological change can influence both transfer and adaptation. Randomized phased training, when feasible and fair, or a well-justified comparison design could strengthen inference. A simple before-and-after improvement without a comparison cannot exclude maturation, concurrent changes, or selective attrition.

4.4. Explanatory contribution and implementation barriers

The framework organizes reskilling around a distinction between providing learning, applying learning, and adjusting

behavior under change. Its value is the explicit separation of these stages and the placement of supervisor support on a specified path. It does not introduce training transfer as a new concept or claim that workplace support was previously ignored. The propositions instead invite a context-specific test of how these established elements operate during a defined technology-related task transition.

Training transfer is a plausible mediator only if its indicators are distinguishable from both training quality and adaptive performance. Future researchers should compare the proposed sequence with alternative explanations, including the possibility that employees who are already more adaptive make greater use of training. A reversed or reciprocal relationship could be especially relevant across repeated learning cycles. A model that performs poorly against such alternatives would require revision rather than a post hoc claim that every observed relationship confirms it.

Boundary conditions also matter. The framework assumes that employees retain a meaningful role in the altered process and can use the trained skills. It may have limited relevance where automation entirely eliminates the focal task without an internal reassignment pathway. Likewise, highly standardized tasks may require accurate routine execution more than broad adaptive behavior. In safety-critical settings, adaptation must be evaluated against authorized procedures; improvisation that increases risk is not successful adaptive performance.

Table 2 identifies potential barriers implied by the framework and the corresponding questions for field research. These are analytical expectations, not measured prevalence estimates. Their purpose is to distinguish a weakness in instruction from a constraint on application or a mismatch between training and the redesigned job.

Table 2: Potential barriers and diagnostic questions

Potential barrier	Mechanism implied by the model	Question for future examination
Training–task mismatch	Instruction does not address the actual task transition.	Are learning objectives linked to new duties?
Limited opportunity to apply skills	Employees acquire skills but lack relevant assignments or resources.	When and where can the trained skill be used?
Weak supervisor support	Production pressure or limited feedback restricts application.	Are practice time and coaching available?
Routine-only instruction	Repetition supports execution but may not prepare employees for variation.	Does training cover decision principles and safe variations?
Overlapping outcome measures	Transfer and adaptation are measured as the same behavior.	Can independent assessors distinguish the two outcomes?

5. Managerial and Policy Implications

5.1. Align Reskilling with Task Transitions

The proposed practical sequence starts with a task-transition map identifying old tasks, new responsibilities, required skills, and permissible decision authority. Training should then provide relevant practice and feedback. Before the employee returns to the task, the supervisor and human resource team should identify where the learned skill will be used, what resources are necessary, and how barriers will be escalated. These are recommendations derived from the framework, not an evaluated intervention package.

5.2. Evaluate Application and Adjustment

Evaluation should distinguish completion, learning attainment, workplace application, and adaptation. A worker may attend training yet fail to acquire the intended skill; another may acquire it but lack the opportunity to apply it. Treating both situations as an adaptability deficit would produce different and potentially ineffective management responses. Records of assignments and resource access can help identify whether the problem concerns instruction, implementation, or task design.

5.3. Strengthen Support and Equitable Access

Reskilling access should also be examined across employee groups rather than offered only to those already judged easiest to train. Recruitment into a future study should be voluntary, with confidentiality protections and clear separation from disciplinary decisions. Supportive practice does not imply lower safety standards or pressure to accept every technology change. Worker concerns may identify inadequate instruction or an inappropriate assignment and should be examined on their merits.

Responsibilities should be coordinated across human resource managers, direct supervisors and training providers. Table 3 summarizes recommendations derived from the proposed model. Public and sectoral support for reskilling may assist access, but the effectiveness of any policy instrument requires a separate evaluation; this article does not establish a national policy impact.

Table 3: Stakeholder responsibilities and recommended actions

Stakeholder	Recommended action	Evidence to monitor
HR managers	Map task transitions and align training, assignments and assessment.	Documented task–skill alignment and access across employee groups.
Direct supervisors	Arrange protected practice, task-specific feedback and resource access.	Practice opportunities, support actions and transfer observations.
Employees	Apply trained procedures and report unclear instructions or barriers.	Demonstrated use, feedback and requests for assistance.
Training providers	Use realistic practice and explain decision principles.	Learning attainment and performance in safe simulated variations.
Enterprise leaders and sector bodies	Coordinate training resources and review equitable participation.	Participation, sustained application and task-relevant outcomes.

6. Conclusion and Future Directions

Reskilling under automation should be understood as a process connecting learning opportunities to changed work requirements. This conceptual article proposes that training transfer helps explain the relationship between reskilling practices and employee adaptive performance, with direct supervisor support strengthening the first stage. The five propositions remain untested. Their practical implication is to assess what employees learn, where they can apply it, and how they respond to genuinely changed tasks. Prospective, multisource evidence is required before the framework can support causal or context-specific conclusions.

The analysis has several limitations. The source base is selective and uneven in full-text accessibility; it is not a comprehensive review of automation-specific field studies. The framework cannot quantify relationships, establish causal effects or support generalization to Vietnamese manufacturing enterprises. Its contribution lies in the explicit separation of reskilling provision, workplace transfer and adaptive behavior, together with the specified role of supervisor support.

Further work should conduct contextual interviews, document the actual task transitions, and develop nonoverlapping measures. Initial studies should evaluate the separate links before treating the conditional indirect relationship as settled. Findings may show that learning attainment, task opportunities, or work design explains more than supervisor support. Such results would be informative because the framework is intended to be falsifiable, not to guarantee a predetermined conclusion.

Future research should update the literature through a broader database-based review and test competing models, including reverse or reciprocal relationships. Qualitative work can refine construct boundaries before multiwave measurement. Empirical findings should determine whether the proposed mechanism holds and where it requires revision.

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