

The Cognitive Rigidity Trap: Managerial Experience, Firm, Performance, and Evidence from Emerging European Economies

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Abstract

Purpose: This study examines the direct impact of managerial characteristics, particularly managerial experience, on firm performance from a behavioral accounting perspective. Additionally, it investigates how internal organizational mechanisms, namely employee training investments and digital technology adoption, mitigate managerial rigidity to optimize corporate financial results.

Research Methodology: Utilizing a quantitative behavioral accounting framework, the empirical analysis evaluates microdata comprising 4,946 firm-level observations from emerging economies in Europe. Ordinary Least Squares (OLS) regression and Generalized Structural Equation Modeling (GSEM) mediation analysis with robust standard errors were executed using Stata software.

Results: Managerial experience and female managerial presence negatively affect firm performance, whereas employee training and digital technology adoption have positive effects. Digital adoption also significantly mediates the effect of employee training on firm performance.

Conclusions: By Integrating Upper Echelons Theory and the Resource-Based View, the findings demonstrate that extensive executive experience can yield an experience trap due to cognitive rigidity and inertia. Combining digital tools with workforce training is a valuable internal resource that counters leadership limitations in dynamic environments.

Limitations: The cross-sectional design constrains the ability to observe long-term temporal dynamics, multi-year adaptation lags, or path-dependent trajectories of human capital investments and digital transformation.

Contributions: Corporate executives and HR policymakers should align employee training directly with digital workflows rather than executing standalone investments while implementing executive upskilling to overcome cognitive inertia.

Keywords: *Behavioral Accounting, Digital Technology Adoption, Employee Training, Firm Performance, Managerial Experience*

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1. Introduction

Global markets confront corporate leaders with disruptions that classical strategy models never anticipated, and behavioral accounting researchers increasingly trace firm outcomes to the cognitive architecture of executives rather than to neoclassical assumptions about rational choice. Classical theory treats managerial tenure as a straightforward asset, but digitalization challenges that assumption directly: firms across Europe now direct substantial capital toward digital transformation programs that run through executives whose careers began before automated reporting systems replaced manual ledgers, a shift that [Dvouletý, Rusu, Roman, and Abakpa \(2026\)](#) confirm is already reshaping small and medium-sized enterprise performance across the European Union. Emerging European economies illustrate this tension with particular clarity: Poland, Hungary, Romania, and the Baltic states rebuilt their corporate governance systems after 1989 and joined the European Union in the 2004 and 2007 accession waves that imposed new regulatory and competitive standards on firms accustomed to state planning, a legacy [Buglea, Cișmașu, Gligor, and Jurcu \(2025\)](#) trace directly to the economic landscapes those countries inherited after leaving central planning, landscapes that still shape digital readiness across Central and Eastern Europe today. The European Union's Digital Decade targets now push firms in these economies toward technology adoption at a pace that outstrips what veteran managers experienced during their formative years and structured training programs emerge as one lever firms can pull to counteract accumulated managerial rigidity ([Official, 2022](#)).

Scholars researching executive experience and firm performance have not reached a consensus. Researchers working on human capital theory argue that managerial tenure builds specialized heuristics and institutional knowledge that protect firms from market shocks. Others, drawing on organizational sociology and cognitive psychology, find the opposite: extended tenure breeds overconfidence and diminishing returns on decision quality, a tension that [Mshana and Dendula \(2026\)](#) formalize as a nonlinear, U-shaped pattern linking CEO tenure to firm value, a pattern whose strength depends on how concentrated ownership constrains entrenchment. This disagreement exposes a theoretical gap in the behavioral accounting literature: most studies treat managerial experience as a single, positive variable and skip the cognitive filters that convert accumulated expertise into strategic liabilities once market conditions shift. An empirical gap accompanies this theoretical one: prior studies rarely test managerial experience alongside internal mechanisms, employee training, and digital technology adoption, which could offset its downside, leaving unresolved whether these mechanisms act as direct drivers of performance in their own right or as channels through which one mechanism transmits its effect on another. Emerging European economies offer an ideal setting to test this gap because these firms experienced two distinct market regimes within a single generation of management: central planning followed by EU-driven market liberalization, a compressed transition that lets researchers observe how managerial cognition adapts, or fails to adapt, when the rules governing competitive advantage change faster than the executives running the firm.

This study challenges the assumption that managerial tenure is an unqualified asset. Using a sample of 4,946 firm-level observations drawn from firms across Central and Eastern Europe sourced from the World Bank Enterprise Surveys [World \(2024\)](#), the empirical results show a statistically significant negative relationship between managerial experience and firm performance. This study frames this pattern as a cognitive rigidity trap, consistent with the entrenchment mechanism documented by [Mshana and Dendula \(2026\)](#) among long-tenured executives. The study extends Upper Echelons Theory by showing that executive background characteristics translate into different outcomes depending on market conditions, and Dynamic Capabilities Theory helps explain why: firms that cannot reconfigure resources fast enough to match a shifting environment lose ground regardless of how experienced their leadership appears. The evidence further shows that employee training directly improves firm performance and drives digital technology adoption, and that digital technology adoption in turn directly improves firm performance while also mediating part of the employee training-firm performance relationship, giving firms a corrective mechanism that does not require replacing senior leadership outright. Accordingly, this study pursues four objectives: first, to test the direct effects of managerial experience, female managerial presence, employee training, and digital technology adoption on firm performance; second, to test whether employee training drives digital

technology adoption; third, to test digital technology adoption as a mediator of the employee training-firm performance relationship; and fourth, to interpret these direct and mediating pathways through Upper Echelons Theory and the Resource-Based View. Section 2 develops the theoretical framework and presents six hypotheses. Section 3 details the proposed methodology. Section 4 presents the results and discussion of the study. Section 5 concludes with the contributions, implications, and limitations of the study.

2. Literature Review and Hypotheses Development

2.1 Upper Echelon Theory

Upper Echelons Theory [Hambrick and Mason \(1984\)](#) anchors this study's theoretical architecture, treating executive characteristics as more than biographical detail: top managers filter organizational environments through a cognitive base built from prior training, career history, and values, a process grounded in [Simon \(1947\)](#) bounded rationality that compresses a complex environment into a subjective field of vision on which executives then act. This filtering process is double-edged, since the same mechanism that lets an executive act decisively under uncertainty can harden into entrenchment once repeated exposure to one operating environment fixes a cognitive template, a pattern behavioral accounting labels cognitive rigidity. This study treats cognitive rigidity as an inferred explanatory mechanism, rather than a directly measured psychological construct. No survey item captures cognitive rigidity itself; therefore, its presence is inferred from the empirical pattern connecting accumulated managerial experience to firm performance, consistent with how prior behavioral accounting research proxies' unobservable cognitive constructs through observable managerial and firm-level indicators.

2.2 Resource-Based View

The Resource-Based View [Barney \(1991\)](#) provides the complementary lens this study needs to explain firm-level performance outcomes, treating valuable, rare, and hard-to-imitate resources, including the cognitive and human capital a firm's leadership embodies, as the basis of sustained competitive advantage. Behavioral accounting bridges these two theories by treating firm performance not as a mechanical output of executive résumés or resource inventories but as the product of psychological processes, cognitive filtering, risk perception, and adaptive capacity, which determine how effectively a leadership team converts available resources into results.

To keep this multi-theory apparatus parsimonious, each grand theory performs a distinct, non-overlapping role rather than jointly explaining the same relationship. Upper Echelons Theory supplies the cognitive-filtering mechanism behind the manager-level hypotheses (H_1 - H_2), explaining why managerial experience and gender shape strategic choices through the executive's subjective field of vision. The Resource-Based View supplies the firm-level resource logic behind the employee-training hypothesis (H_3), explaining why a trained workforce constitutes a valuable, rare, and hard-to-imitate resource. Dynamic Capabilities Theory supplies the reconfiguration logic behind the digital technology adoption and mediation hypotheses (H_4 , H_6), explaining why adoption functions as a capability that converts existing resources into performance as market conditions shift. The Technology-Organization-Environment model and the Unified Theory of Acceptance and Use of Technology, introduced in Sections 2.3.4 and 2.3.5, operate at a narrower, operational level nested under Dynamic Capabilities Theory: they specify the contextual readiness conditions and the individual-level acceptance mechanism, respectively, through which the broader capability-reconfiguration logic unfolds, rather than standing as independent theories competing to explain firm performance.

2.3 Previous Research and Hypotheses Development

2.3.1 Managerial Experience and Firm Performance

Applied to managerial tenure specifically, this combined framework predicts that extended experience can harden into cognitive entrenchment rather than mature into expertise, a pattern [Zavertiaeva and Ershova \(2025\)](#) confirm empirically by finding that expert and structural power built on long managerial tenure carries a negative effect on firm performance, driven by heightened risk aversion among long-tenured executives. [Dao \(2026\)](#) extends this argument by showing that managerial

overconfidence, a trait that often accumulates alongside tenure, reduces firms' cash holdings and, thereby, their strategic flexibility. [Rajabalizadeh \(2023\)](#) documents that overconfident CEOs produce systematically less readable financial disclosures, a textual signature of the same entrenched thinking that the cognitive rigidity construct captures. [Candy, Wong, and Krisyadi \(2026\)](#) extend this evidence on entrenched executive traits by showing that CEO narcissism exerts a significant effect on firm performance that operates partly through Environmental, Social, And Governance (ESG) performance, underscoring that personality-driven cognitive rigidity can shape outcomes through indirect as well as direct channels. [Oktaryani, Wiagustini, Artini, and Candraningrat \(2026\)](#) find a parallel pattern among Indonesian SMEs, where managerial overconfidence shapes performance indirectly through debt-financing decisions, and [Le-Bao, Nguyen-Ngoc-Hoang, Le-Thi-Thuy, and Ho-Thi-Kim \(2025\)](#) show that CEO characteristics systematically affect working capital management efficiency, evidence that tenure-linked traits reach beyond strategic posture into day-to-day operational decisions. [Kurdyukov \(2022\)](#) situates these findings within a broader observation that leadership style in finance remains under-examined relative to its practical importance, a gap this study addresses directly. [Liu, Wu, Li, Zhang, and Liu \(2026\)](#) add a digital-era dimension to this mechanism, finding that executives' prior IT exposure shapes the quality of a firm's digital transformation, which implies that executives who lack this exposure, disproportionately the long-tenured, may struggle to translate authority into effective digital strategy. Most prior research still treats tenure as a uniformly positive proxy for competence, overlooking the cognitive filters that convert experience into liabilities once market conditions shift. This gap in European economies exposes unusual clarity, given their compressed transition from central planning to EU liberalization. Based on this theoretical and empirical foundation, this study proposes the following hypotheses:

H₁: Managerial experience has a significantly negative effect on firm performance

2.3.2 Female Managers and Firm Performance

Upper Echelons Theory also predicts that gender-differentiated cognitive frames shape strategic choices, and behavioral finance research links female leadership to higher risk awareness, more prudent resource governance, and stronger collaborative decision-making in the face of uncertainty. Di [Berardino and Antenzio \(2026\)](#) confirm this mechanism among innovative Italian SMEs, finding that gender-diverse leadership improves financial performance through more deliberate risk management rather than through any single demographic effect. [\(Tahiri & El, 2026\)](#) reinforce this governance channel at the board level, showing that gender diversity and board independence are both positively associated with the performance of Moroccan listed firms. This suggests that the benefits of female leadership operate through the same monitoring and deliberation mechanisms that this study expects to matter for EU7 executives. The existing literature rarely tests whether this governance advantage persists inside transitioning institutional environments rather than acute recovery periods alone, a gap emerging European economies help address given their own history of post-2020 recovery and EU accession volatility. These converging strands of theory and evidence lead this study to propose the following hypothesis:

H₂: Female managers have a significant positive effect on firm performance

2.3.3 Employee Training and Firm Performance

The Resource-Based View holds that firm performance flows from resources that are valuable, rare, and difficult to imitate, and employee training converts raw labor into exactly this kind of firm-specific capability that competitors cannot copy through observation alone. [Wubet, Gebre-Egziabher, and Hailu \(2025\)](#), confirm this mechanism in Ethiopia's textile and garment sector, finding that vocational skills development programs raised productivity, though the gain held only when training paired with broader organizational change rather than arriving as a standalone intervention. [Zhang, Huang, and Gao \(2026\)](#) report a comparable pattern inside a Chinese-managed factory in Morocco, where workplace training produced measurable performance gains only once the content was adapted to local operational routines. [Andersson, Lindskog, Barth, Melin, Ståhl, and Eklund \(2026\)](#) extend this argument at the national level, showing that structured lean-implementation programmes raise organizational performance only when training is embedded in a coherent, organization-wide change

programme rather than delivered as an isolated course, which reinforces the view that training's payoff depends on organizational context as much as on content. [Javed, Mustamil, Sadiq, Najam, and Nasir \(2026\)](#) supply a further parallel from the banking sector, finding that structured human resource practices raise sustainability performance only when firms simultaneously build the financial-technology capability needed to act on that human capital, a training-plus-capability pairing consistent with the mechanism proposed in this study. [Ichdan \(2024\)](#) corroborates this pattern in an educational-sector setting, finding that training investment raises employee productivity only in combination with a supportive work environment, motivation, and job satisfaction, while [Mabhanda and Masukume \(2025\)](#) show that succession-planning practices, a form of managerial-level training, shaped employee relations among health professionals in Zimbabwe, providing evidence that training effects cascade upward into managerial capability as much as downward into frontline skill. This context-dependence leaves open how training returns behave in emerging European economies, where EU regulatory harmonization creates its own distinct institutional pressure. Taken together, this theoretical and empirical record supports the following hypothesis:

H₃: Employee training has a significant positive effect on firm performance

2.3.4 Digital Technology Adoption and Firm Performance

Dynamic Capabilities Theory frames digital technology adoption as a capability that allows firms to reconfigure resources as market conditions shift, rather than as a one-time equipment purchase disconnected from strategy. The Technology-Organization-Environment model supplies the operational lens for which contextual readiness conditions, organizational and infrastructural, determine whether that capability materializes into actual adoption. [Thi and Huynh \(2026\)](#) confirm this mechanism among private enterprises across major economic hubs in Vietnam, finding that digital transformation carries a significant positive effect on firm performance through both a direct operational channel and an innovation-mediated indirect channel. [Al-Kayed, Rotimi, Purushothaman, Pawley, and Hoseini \(2026\)](#) reach a comparable conclusion among subcontracting firms in New Zealand's construction industry, identifying organizational readiness and enabling infrastructure as the conditions that determine whether digital technology investment converts into measurable competitiveness gains. [Gao, Wang, Chen, Peng, and Mustafa \(2026\)](#) extend this evidence to a resource-based logic directly, showing that Chinese manufacturers that treat digital technologies, artificial intelligence, IoT integration, and green technology alike, as strategic resources achieve significantly higher sustainability performance than firms that adopt the same technologies without a resource-oriented strategy. [Okigbo, Mbamalu, and Iruogu \(2025\)](#) reinforce this resource-based logic among Nigerian small businesses, finding that artificial-intelligence-driven digital marketing transformation reshaped customer relationship management and competitive positioning, [Zerine, Biswas, Doha, Meghla, and Polas \(2025\)](#) report a comparable effect among Bangladeshi retail firms, where technological and organizational readiness jointly determine whether artificial intelligence adoption translates into stronger customer retention and loyalty. Prior research has not tested whether this mechanism holds in emerging European economies, where digital infrastructure quality varies considerably across member states, from the Baltic states to Romania, and may condition how much performance benefit any single firm extracts from the same adoption investment. This combined body of theory and evidence motivates the following hypothesis:

H₄: Digital technology adoption has a significant positive effect on firm performance

2.3.5 Employee Training and Digital Technology Adoption

At the individual level, and nested under the same Dynamic Capabilities logic introduced above, the Unified Theory of Acceptance and Use of Technology holds that successful technology integration depends on overcoming user resistance, cutting perceived complexity, and raising effort expectancy among personnel who must use new systems daily. Structured employee training equips the workforce with digital skills and self-efficacy, which lower resistance and shorten the path to routine use. [Ziqubu \(2026\)](#) confirms this mechanism in a very different institutional setting, South African public health administration, where continuous ICT training raised staff readiness and drove technology utilization forward even under significant resource constraints. [Khan, Almazrouei, Sharairi, Khan, and Harmal](#)

(2026) provide a corporate-sector parallel, finding that digital leadership capability raises IT firm performance both directly and indirectly through digital innovation, which implies that the same capability-building logic that links training to adoption at the individual level operates at the leadership level as well. [Lydiana, Gustomo, and Bangun \(2025\)](#) extend this logic to the banking sector through a qualitative lens. Their interview-based study of senior Indonesian bank executives provides contextual evidence that leadership practices explicitly aimed at fostering meaningful employee experiences accompany digital transformation efforts, a pattern consistent with, though not a quantitative test of, the training-to-adoption channel proposed in this study. This cross-context convergence suggests that the training-to-adoption pathway reflects a durable organizational mechanism rather than an artifact of one dataset or industry, a proposition that this study tests inside EU7 corporate firms. Based on this theoretical and empirical foundation, this study proposes the following hypothesis:

H₅: Employee training has a significant positive effect on digital technology adoption

2.3.6 Digital Technology Adoption mediates Employee Training and Firm Performance

The Resource-Based View and Dynamic Capabilities Theory together frame digital technology adoption as the mechanism through which employee training investment converts into firm performance rather than remaining unrealized potential: training builds firm-specific human capital, and adoption gives that capital a productive channel into measurable firm-level performance. [Thi and Huynh \(2026\)](#), and [Ziqubu \(2026\)](#) both show that digital capability functions as a transmission mechanism linking human capital investment to performance outcomes rather than acting as an independent, unrelated driver. [Li, Ayupp, and Md \(2026\)](#) supply direct empirical support for this serial logic, finding among smallholder enterprises in Henan, China that social and psychological capital raise organizational performance through a documented sequential path in which innovation capability builds first and technology adoption carries the effect the rest of the way to performance, the same serial-mediation structure this study proposes for training and digital adoption. [Babaei, Yousefi, and Peikanpour \(2026\)](#) reinforce this mediated logic in a different setting, showing that knowledge integration capability carries the effect of external knowledge search through to innovation performance among Iranian biopharmaceutical firms, evidence that capability-based mediation of this kind generalizes across sectors rather than holding only in one industry. Prior studies rarely test training and digital adoption as one joint mediated pathway rather than as two separate direct effects estimated in isolation, leaving the indirect route proposed in this study empirically underexplored in emerging market settings. Based on this theoretical and empirical foundation, this study proposes the following hypothesis:

H₆: Digital technology adoption significantly mediates the relationship between employee training and firm performance

3. Research Methodology

3.1 Research Design and Sample Selection

This study adopts a quantitative, cross-sectional design using secondary microdata to test the structural relationships between managerial attributes, workforce training, digital technology adoption, and firm performance. The target population comprises formal private commercial establishments across seven European Union member states (EU7: Bulgaria, Estonia, Hungary, Latvia, Lithuania, Poland, and Romania), surveyed during the 2023-2024 round of the World Bank Enterprise Survey (WBES) ([World Bank, 2024](#)). A multistage purposive sampling procedure builds a sample supporting structural comparability across borders: starting from 6,842 surveyed enterprises, the procedure removes state-owned enterprises, non-profit institutions, and informal micro-units to isolate private-sector firms, then drops observations missing manager experience, manager gender, training participation, or the transactional figures needed to construct the digital adoption index, and finally removes firms reporting non-positive or missing annual revenue, winsorizing extreme values at the 1st and 99th percentiles to limit distortion from reporting anomalies while preserving sample size. This procedure yielded a maximum analytical pool of 4,957 firm-level observations across seven countries. Because item-level missingness affects individual variables differently, the count per

variable ranged from 4,920 to 4,957, as detailed in Table 1. The full structural model (Equations 1-3), which requires non-missing values on all variables simultaneously, is estimated on the resulting final analytic sample of 4,946 firm-level observations, providing sufficient degrees of freedom for stable structural equation estimation and sufficient cross-country variation to support the country fixed effects in the analysis later applies. The unit of analysis throughout this study is the individual firm: each observation is one cross-sectional firm-level record drawn from the 2023-2024 WBES round, not a firm-year panel observation, and no firm contributes more than one record to the estimation sample.

3.2 Operational Definition and Measurement of Variables

Firm Performance (Y) as the natural logarithm of Total Annual Sales Revenue: $\ln_firm_performance = \ln(\text{Total Annual Sales Revenue})$, a transformation that reduces distributional skew and stabilizes residual variance ([Zavertiaeva & Ershova, 2025](#)). Manager Experience (X_1) as a continuous variable capturing the total years of managerial experience accumulated by the firm's top executive, consistent with Upper Echelons Theory's treatment of accumulated tenure as a driver of cognitive filtering; in this sample, experience ranges from 1 to 68 years with a mean of 24.87 years. Tenure is a behavioral proxy for cognitive rigidity, not a direct measure of it: the WBES instrument records years of managerial experience but contains no psychometric item on cognitive flexibility, so any executive-specific factor correlated with tenure, such as cohort effects tied to when an executive began their career, could masquerade as a rigidity effect; Section 5.2 revisits this limitation. Female Manager (X_2) as a binary indicator, 1 when the firm's top executive is female and 0 when male, consistent with standard practice in the gender-diverse leadership literature ([Di & Antenozio, 2026](#)). Employee Training (X_3) as 1 when the enterprise funded or ran formal internal training during the fiscal period, and 0 otherwise, consistent with ([Wubet, Gebre-Egziabher, & Hailu, 2025](#); [Zhang, Huang, & Gao, 2026](#)). Digital Technology Adoption (M), the mediating variable, as a composite percentage averaging the share of annual sales collected through electronic payment and the share of purchases executed through digital payment: $digital_adoption = (\% \text{ Sales E-Payments} + \% \text{ Purchases E-Payments}) / 2$, following ([Thi, & Huynh, 2026](#); [Ziqubu, 2026](#)). We add two controls, Firm Size (natural log of total permanent employees) and Firm Age (survey year minus registration year), to isolate these mechanisms from confounding firm characteristics.

3.3 Data Collection Method

The study sources its microdata from the official WBES database [World \(2024\)](#), which uses stratified random sampling to keep establishments representative of firm size, sector, and geographic region within each participating country. Professional research organizations administered the survey under World Bank supervision using standardized audited protocols that combined face-to-face and secure digital interviews with business owners, human resource executives, and financial managers. This design supplies firm-level details that most public financial databases in the region do not report at all, a gap that matters most for private firms carrying no obligation to disclose annual accounts. Confidentiality assurances reduce strategic self-reporting, and centralized data-cleaning algorithms keep indicators comparable across countries. Prior to estimation, we audited every extracted field and recoded non-analytical responses such as "don't know" or "refused" as missing to prevent estimation bias, a manual step that complements the WBES team's own cleaning routines given that country-level teams sometimes apply local coding conventions a single automated pass would not catch.

3.4 Data Analysis Method

All statistical procedures were performed using Generalized Structural Equation Modeling (GSEM) in Stata SE 17.0, which combines continuous metrics, binary indicators, and simultaneous multi-equation mediation paths within one maximum-likelihood framework. The analysis proceeds in four stages: descriptive statistics establish baseline sample characteristics; diagnostic checks evaluate multicollinearity through Variance Inflation Factors (threshold below 5.0; [Hair, Black, Babin, & Anderson, 2010](#)), heteroskedasticity through the Breusch-Pagan/Cook-Weisberg test [Breusch and Pagan \(1979\)](#) with Huber-White sandwich standard errors clustered by country [Petersen \(2009\)](#), and specification integrity through residual and leverage plots. We cluster standard errors at the country level rather than the firm level because the WBES stratified sampling design draws many firms from within each of the seven countries. Therefore, country-level shocks, such as a shared regulatory

change or currency movement, likely correlate firms' error terms within a country in ways that firm-level heteroskedasticity-robust errors alone would not capture. We acknowledge that seven clusters fall below the range conventionally recommended for asymptotic cluster-robust inference to perform reliably (Cameron, Gelbach, & Miller, 2008). We treat this as a limitation of the reported standard errors rather than a fully resolved issue, and we pair country clustering with country fixed effects in Equation 1 so that between-country heterogeneity is absorbed by the model itself rather than left for the standard errors alone to handle. We test the direct hypotheses (H_1 - H_4) through one structural path equation that includes managerial experience, female manager status, employee training, and digital technology adoption, together with firm-level controls and country fixed effects (Equation 1). We then test the mediation hypotheses (H_5 - H_6) through a simultaneous two-equation system: Equation 2 models digital adoption as a function of the same manager- and training-related predictors, and Equation 3 reproduces Equation 1's firm-performance equation so that, once the two equations are estimated jointly, employee training's total effect on firm performance is decomposed into the direct effect already reported for H_3 and the indirect effect, transmitted through digital adoption, that H_6 tests.

Formula 1: Direct Effects Model (H_1 - H_4)

$$\ln FirmPerformance_i = \beta_0 + \beta_1 ManagerExperience_i + \beta_2 FemaleManager_i + \beta_3 EmployeeTraining_i + \beta_4 DigitalAdoption_i + \beta_5 FirmSize_i + \beta_6 FirmAge_i + Country_i + \varepsilon_i \quad (1)$$

Formula 2: Mediator Model (H_5)

$$DigitalAdoption_i = \gamma_0 + \gamma_1 ManagerExperience_i + \gamma_2 FemaleManager_i + \gamma_3 EmployeeTraining_i + \gamma_4 FirmSize_i + \gamma_5 FirmAge_i + \varepsilon_i \quad (2)$$

Formula 3: Indirect (Mediation) Effects Model (H_6)

$$\ln FirmPerformance_i = \beta_0 + \beta_1 ManagerExperience_i + \beta_2 FemaleManager_i + \beta_3 EmployeeTraining_i + \beta_4 DigitalAdoption_i + \beta_5 FirmSize_i + \beta_6 FirmAge_i + Country_i + \varepsilon_i \quad (3)$$

4. Results and Discussions

4.1 Statistical Results

Table 1 reports the descriptive profile of our EU7 sample, with observation counts ranging from 4,920 to 4,957 across variables due to item-level missingness before listwise deletion. Firm performance ($\ln_firm_performance$) averages 16.047 (SD = 2.715, N = 4,946), ranging from 9.616 to 28.393, a spread that shows real performance variation across the sample rather than a clustered and homogeneous distribution. Manager experience averages 24.874 years (SD = 11.011, range 1-68, N = 4,957), which confirms that the dataset captures both early career and multi-decade executives in the same sample, giving H_1 the tenure variation needed to test a cognitive rigidity effect rather than a ceiling effect concentrated among only the most senior executives. Female managers lead 18.7% of the sampled firms (N = 4,953), and 32.4% of firms report formal employee training programs during the fiscal period (N = 4,949). Digital technology adoption (dpa) averages 85.623% (SD = 19.902, N = 4,920), a high baseline that shows that most EU7 firms in the sample already route the majority of their transactions through digital payment channels, which leaves less room for adoption gains at the margin than a lower starting point would suggest. The logged firm size averages 3.313, and firm age averages 23.161 years (max = 224), reflecting a handful of long-established legacy enterprises in the sample.

Table 1. Statistic descriptive

Variables	Obs	Mean	Std. Dev.	Min	Max
$\ln_firm_performance$	4946	16.047	2.715	9.616	28.393
$manager_experience$	4957	24.874	11.011	1	68
$female_manager$	4953	0.187	0.390	0	1

Variables	Obs	Mean	Std. Dev.	Min	Max
employee_training	4949	0.324	0.468	0	1
dpa	4920	85.623	19.902	0	100
ln_firm_size	4956	3.313	1.335	0	8.683
firm_age	4951	23.161	16.119	1	224

Our baseline linear regressions, run with robust standard errors and country and year fixed effects, confirm that both structural equations fit the data well before we move to the GSEM. Model 1 explains 86.51% of the variance in firm performance ($R^2 = 0.8651$, $F(13, 4878) = 2003.69$, $p < 0.001$), and Model 2 explains 12.47% of the variance in digital technology adoption ($R^2 = 0.1247$, $F(10, 4896) = 66.79$, $p < 0.001$). These fit statistics provide confidence that our GSEM specification, which layers mediation on top of this baseline structure, rests on a well-specified foundation.

Table 2 presents the GSEM estimates for the four direct paths (H_1 - H_4) and the training-to-adoption path (H_5), drawn from a simultaneous maximum-likelihood model with a log pseudolikelihood of -28,241.60. Manager experience exerts a negative and significant effect on firm performance ($\beta = -0.0047$, $z = -3.22$, $p = 0.001$), which supports H_1 and is consistent with the cognitive rigidity mechanism proposed in this study: each additional year of tenure is associated with lower firm performance rather than higher performance. Female managers show a negative and significant coefficient ($\beta = -0.2136$, $z = -5.74$, $p < 0.001$), which is opposite to H_2 's positive prediction. Because H_2 specifies a positive effect, this significant negative coefficient means that H_2 is not supported, even though the relationship clears conventional significance thresholds. Employee training has a positive and significant effect on firm performance ($\beta = 0.2132$, $z = 6.30$, $p < 0.001$), which supports H_3 , and digital technology adoption raises firm performance in its own right ($\beta = 0.0036$, $z = 4.85$, $p < 0.001$), which supports H_4 . Employee training also directly drives digital technology adoption ($\beta = 2.3097$, $z = 4.06$, $p < 0.001$), which supports H_5 and sets up the mediation path Table 3 tests.

Table 2. The test results

Hypotheses	Relationship	β	z-value	p-value	Decision
H_1	Manager Experience $\rightarrow$ Firm Performance	-0.0047***	-3.22	0.001	Supported
H_2	Female Manager $\rightarrow$ Firm Performance	-0.2136***	-5.74	<0.001	Not Supported
H_3	Employee Training $\rightarrow$ Firm Performance	0.2132***	6.3	<0.001	Supported
H_4	Digital Technology Adoption $\rightarrow$ Firm Performance	0.0036***	4.85	<0.001	Supported
H_5	Employee Training $\rightarrow$ Digital Technology Adoption	2.3097***	4.06	<0.001	Supported

Note: ***, **, * denote significance levels at 1%, 5%, and 10%, respectively

Table 3 isolates the indirect effect that H_6 proposes: the effect of employee training on firm performance, transmitted through digital technology adoption, equals 0.0084 ($p = 0.002$). Although small next to the training's direct effect (0.2132), this coefficient clears conventional significance and, matching H_6 's predicted direction, supports H_6 and confirms partial mediation. Firms that train their workforce raise firm performance through two channels simultaneously: direct productivity gain and indirect gain through faster digital adoption. Together, these six paths tell a consistent story: five of

the six hypotheses, H_1 and H_3 through H_6 , are supported in both significance and predicted direction, whereas H_2 is not supported because its effect, although significant, runs opposite to the predicted positive direction. Firms that pair workforce investment with digital capability outperform firms that lean on either lever alone, and firms that lean on managerial tenure without renewal underperform.

Table 3. The test of indirect effects

Hypothesis	Indirect Relationship	β	p-value	Decision
H_6	Employee Training $\rightarrow$ DTA $\rightarrow$ Firm Performance	0.0084***	0.002	Supported

Note: ***, **, * denote significance levels at 1%, 5%, and 10%, respectively

4.2 Critical Discussion

Because the design was cross-sectional, the interpretations below describe associations consistent with the proposed mechanisms rather than causally identified effects. Section 5.2 provides details of this limitation. Our finding that manager experience has a negative and significant effect on firm performance ($\beta = -0.0047$, $p = 0.001$) provides the cognitive rigidity mechanism proposed in this study with its clearest empirical support. Upper Echelons Theory predicts that executives filter strategic information through a cognitive base built on prior training and career history. Our results show what happens once the base hardens rather than stays flexible: each additional year of tenure is associated with lower firm performance rather than higher performance. This pattern fits the institutional history of emerging European economies with an unusual degree of precision. Many top executives in Poland, Hungary, Romania, and the Baltic states built their careers inside firms that survived central planning, then navigated privatization, currency crises, and EU accession, and that survival record often becomes the executive's own proof that past judgment generalizes to present conditions. Our data suggest otherwise: the routines that carried a firm through the 1990s transition do not transfer on their own to firms competing under EU digital single market directives 30 years later, no matter how well those routines served the firm at the time, and executives who never updated those routines now sit at the center of a measurable performance drag. This finding also departs from the human capital tradition that treats tenure as an unqualified asset, and it aligns instead with the negative tenure evidence [Zavertiaeva and Ershova \(2025\)](#) document among managers whose expert power rests on accumulated years rather than adaptive judgment. Firms that continue to promote and retain executives based on tenure alone, without pairing tenure with structured renewal, risk mistaking survival for skill, the trap named in this study's title.

The negative and significant coefficient on female managers ($\beta = -0.2136$, $p < 0.001$) runs opposite to what our literature review predicted, and this reversal deserves a direct explanation rather than a quiet re-framing. Upper Echelons Theory and the behavioral finance literature both point toward female leadership as a source of prudent governance and risk-aware decision-making, drawing on evidence such as [Di and Antenzio \(2026\)](#) Italian SME sample and [Tahiri and El \(2026\)](#) Moroccan board-level samples. Our EU7 sample did not replicate this positive pattern. Contrary to the conventional expectation that female leadership enhances firm performance, the negative association [Hassan and Sivakumar \(2026\)](#) report among small and medium firms in post-pandemic India is consistent with the negative coefficient observed in the present study, suggesting that the performance implications of female managerial participation may be context-dependent rather than uniformly positive. Several competing explanations for this pattern merit consideration rather than dismissal of the hypothesis. First, a selection effect may operate in reverse: firms across post-communist Europe may appoint female executives at a higher rate into already struggling divisions or legacy firms that carry structural disadvantages predating that appointment, a pattern management researchers call the glass cliff. Second, institutional friction specific to this region may blunt whatever behavioral advantage female leadership carries elsewhere; corporate governance structures across much of Central and Eastern Europe remain male-dominated at the board level, and a female executive operating inside that

structure may hold the title without holding the same practical authority to execute strategic change that Tahiri and El Arif's board-independence findings assume. Third, our measure captures ordinary operating conditions rather than the innovation-driven SME setting where Di Berardino and Antenozio found their strongest effect. Gender-driven advantages may be concentrated within specific organizational contexts rather than persisting uniformly across firms. This finding does not overturn Upper Echelons Theory; it shows that the theory's predicted mechanism depends on an institutional environment that grants the executive real decision authority, a condition our EU7 sample may not uniformly satisfy.

Employee training's positive and significant effect on firm performance ($\beta = 0.2132$, $p < 0.001$) confirms the Resource-Based View's core prediction: firm-specific human capital, once built, functions as a competitive asset that competitors cannot copy on short notice. This effect size carries real economic weight since it means that firms that invest in formal training programs outperform firms that skip that investment by a margin larger than most single operational efficiency gains could deliver on their own. Our findings are consistent with those of [Wubet, Gebre-Egziabher, and Hailu \(2025\)](#), who document a comparable productivity gain from vocational training in Ethiopia's textile sector, and [Liu, Wu, Li, Zhang, and Liu \(2026\)](#), whose Moroccan factory-training evidence shows that returns depend on how well training content adapts to local operational routines rather than holding uniformly. What our EU7 evidence adds is a regional test case where training operates alongside a documented tenure penalty: veteran leadership alone shows no association with performance gains in this sample, but workforce investment is associated with the kind of performance gains that entrenched leadership no longer delivers. This complementary relationship is important for firms navigating the EU's regulatory harmonization agenda, where compliance and reporting standards change faster than many legacy management teams can track without deliberate upskilling.

The positive effect of digital technology adoption on firm performance ($\beta = 0.0036$, $p < 0.001$) is consistent with the Technology-Organization-Environment framework and Dynamic Capabilities Theory, which identify digital integration as a resource associated with performance gains rather than a compliance cost that firms absorb without benefit. This result echoes [Thi and Huynh \(2026\)](#), who found that Vietnamese enterprises gain measurable performance from digital transformation through both a direct operational channel and an innovation-mediated indirect channel. Our EU7 context adds a boundary condition worth naming: digital infrastructure quality varies greatly across the region, and a firm in Estonia, now among the EU's most digitized economies, faces a different adoption ceiling than a firm in Romania, where infrastructure gaps still constrain how much performance benefit any single firm can extract from the same technology investment. Our country fixed effects absorb some of this variation, but the coefficient we report should be read as an average effect across a region in which the underlying opportunity differs from one member state to the next. This nuance matters for policymakers as much as for firm strategy: EU digital cohesion funding that narrows infrastructure gaps across member states may raise firm performance by as much as any single firm's own digitalization budget, which turns this finding into an argument for coordinated public investment rather than firm-level action alone.

The mediation result anchors this study's central argument: digital technology adoption channels 0.0084 of employee training's total effect on firm performance through an indirect path ($p = 0.002$, 95% CI excludes zero), in addition to training's direct effect of 0.2132. This dual-channel structure tells a mechanistic story that neither variable alone can tell: training builds the human capital a firm needs, and adoption gives that human capital somewhere productive to go to. [\(Ziqubu, 2026\)](#) documents a parallel pattern inside a very different institutional setting, South African public health administration, where continuous ICT training raised staff readiness and drove technology utilization forward even under significant resource constraints. The convergence between a European corporate sample and a Southern African public-sector sample suggests that this training-to-adoption-to-performance pathway reflects a durable organizational mechanism rather than an artifact tied to one dataset or industry. For firms across the EU7, this mechanism offers a practical route around the cognitive rigidity trap identified at the top of the organization: even when senior leadership resists adaptation, investment lower in the organizational hierarchy, in workforce skills, and digital tools

together, can still move firm performance upward, which gives middle management and human resources functions a genuine strategic role rather than a purely administrative one.

Taken together, these five findings expose a structural asymmetry worth stating in plain terms: the variables inside executive control, training investment, and technology adoption are associated with higher performance, while a variable tied to executive background, extended tenure, is associated with lower performance, and a variable meant to signal governance quality, female leadership, does not behave the way existing theory predicted in this specific institutional setting. Experience and gender diversity matter; however, both effects appear conditional on institutional structures that this study's coefficients cannot fully unpack, and some of the divergence from prior literature probably traces to genuine institutional differences between our EU7 sample and the Southeast Asian and MENA samples that anchor much of the comparison literature, since post-communist corporate governance carries a distinct legacy that neither Malaysian nor Vietnamese firms share. Future research that pairs quantitative coefficients like ours with qualitative interviews inside EU7 boardrooms could help determine which explanation carries more weight. Section 5.1 develops the managerial, policy, and investor implications of these patterns in more detail, calibrated to what this cross-sectional evidence can and cannot support.

5. Conclusions

5.1 Conclusion

Manager experience exerts a negative and significant effect on firm performance ($\beta = -0.0047$, $p = 0.001$) across 4,946 firm-level observations from seven EU member states, confirming that veteran executives who built their careers in centrally planned institutions carry cognitive rigidity into markets that now demand rapid digital adaptation. Female managers also show a negative and significant coefficient ($\beta = -0.2136$, $p < 0.001$). Section 4.2 discusses several possible explanations for this reversal, including a glass cliff selection pattern and limited executive authority documented across post-communist corporate governance. However, because glass cliff conditions and executive authority were not directly measured in this study, these remain candidate interpretations requiring future empirical verification rather than a confirmed explanation. Employee training is directly associated with higher firm performance ($\beta = 0.2132$, $p < 0.001$) and is associated with further indirect gain through digital technology adoption (indirect effect = 0.0084, $p = 0.002$). Digital adoption had a positive direct association ($\beta = 0.0036$, $p < 0.001$). This pattern is consistent with firms addressing the cognitive rigidity trap not by replacing tenure with youth but by pairing workforce training with digital capability, although the cross-sectional design cannot establish this as a causal remedy.

5.2 Research Limitations

Cross-sectional data limit causal claims about tenure, training, and performance, since a single survey wave cannot separate a genuine cognitive rigidity effect from a cohort effect tied to when an executive entered the workforce. The binary female-manager indicator cannot distinguish nominal board appointments from real decision-making authority, which leaves the glass cliff explanation for H_2 untested rather than confirmed. Relatedly, cognitive rigidity itself is never observed directly: the WBES instrument contains no psychometric measure of executive cognition, so the construct is inferred from the negative experience-performance coefficient rather than measured independently. Future studies should pair survey microdata with direct cognitive or behavioral assessments of executives to test this inference more directly.

5.3 Suggestions and Directions for Future Research

Researchers should also test whether cognitive rigidity responds to targeted interventions, such as mandatory executive retraining, or persists regardless of remedial investment, a question that one cross-sectional wave cannot resolve on its own. A longitudinal panel spanning multiple WBES survey rounds would allow future work to separate the tenure effect reported here from the broader institutional transition still unfolding across the EU7. Because cognitive rigidity was inferred rather than directly measured in this study, future work could pair survey microdata with direct cognitive or behavioral assessments of executives to test this inference more rigorously. Similarly, since the glass cliff explanation for H_2 remains untested here, researchers with access to firm-level governance data

could examine executive authority directly, rather than through managerial titles alone, to determine whether limited decision-making power drives the negative female manager coefficient observed in this sample. Extending the model to other emerging market contexts, including Southeast Asia, would also help clarify whether the cognitive rigidity trap reflects a distinctly post-communist institutional legacy or a more general feature of firms navigating rapid regulatory and technological change.

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Author Contributions

INA handled the data collection and processing, conducted the empirical analysis, and compiled the figures and tables that appear in the manuscript. The conceptualization and design of the study, including the theoretical framework and literature review, was SS's contribution, who also oversaw the research process from beginning to end. Together, the two authors drafted the manuscript, revised it critically for important content, and approved the final version submitted for publication.

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