

Article

Digital Knowledge and Organizational Performance in Emerging Economies: Evidence from Uzbekistan

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Abstract: This paper examines the relationship between employee-level digital knowledge and perceived organisational performance in Uzbek enterprises. The theoretical framing draws on the resource-based view (RBV) and dynamic capabilities, which treat digital knowledge as a strategic resource complementary to technology investment. Empirical analysis is conducted on a cross-sectional online survey of 288 respondents from five industry sectors. Digital knowledge is operationalised through the Composite Digital Knowledge Index (CDKI; Cronbach's $\alpha = 0.797$), and organisational performance is captured through a global self-report item. Spearman's rank correlation between the two variables is $\rho = 0.51$ ($p < 0.001$), a moderate-to-strong positive association. Group comparisons show a clear gradient across knowledge tiers: among respondents in the low-knowledge tier, 57% disagree or strongly disagree that digitalisation benefits their organisation, whereas in the high-knowledge tier, 68% agree or strongly agree. Multivariate sensitivity analysis with position, age and industry controls confirms the primary association. The findings support the interpretation that digital investment produces performance returns only in the presence of adequate human-capital complementarity, and they argue for the integration of digital-literacy programmes into national digital transformation strategies.

Keywords: organisational performance, digital knowledge, resource-based view, dynamic capabilities, Uzbekistan, emerging economies, human capital, Spearman correlation.

1. Introduction

Whether digital transformation produces measurable gains in organisational performance is one of the enduring empirical questions of contemporary management research. The evidence from developed economies is broadly affirmative: firms with higher digital maturity outperform their peers on productivity, growth and profitability (Westerman, Bonnet & McAfee, 2014; Kane et al., 2019; Verhoef et al., 2021). Yet the mechanism is contested. Some studies emphasise technology as the primary driver; others treat digital knowledge and organisational learning as the binding constraint.[1][2]

The resource-based view (RBV) of the firm offers a productive framing for this debate. In the RBV tradition (Barney, 1991; Teece, 2018), sustainable competitive advantage arises from resources that are valuable, rare, inimitable and non-substitutable. Digital technologies, in isolation, do not meet all four criteria: they are increasingly commoditised and readily inimitable. Digital knowledge, embedded in the human capital of the workforce and the routines of the organisation, is more plausibly a source of durable advantage.[3][4]

This paper tests the digital-knowledge–performance link in the specific context of Uzbek enterprises. Two hypotheses are examined. H1: employee-level digital knowledge, as captured by the Composite Digital Knowledge Index (CDKI), is positively associated

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with perceived organisational performance. H2: the association holds after controlling for organisational position, age and industry.[5]

The Uzbek setting is particularly informative. Digital transformation is a policy priority and public investment in digital infrastructure is substantial, but human-capital readiness varies across sectors. If the RBV interpretation is correct, the returns to digital investment should track digital-knowledge levels rather than infrastructure levels. The empirical results below are consistent with this expectation.[6]

The RBV, formalised by Barney (1991), treats firm-level heterogeneity in resources as the fundamental source of performance differences. Later refinements - notably the dynamic capabilities framework (Teece, 2018) - extend the RBV to environments of rapid technological change. In such environments, static resource endowments are less important than the organisation's capacity to reconfigure resources over time.[7]

Digital transformation research has increasingly adopted this framing. Warner and Wäger (2019) argue that digital dynamic capabilities are constituted by sensing, seizing and transforming activities that depend on digital knowledge distributed across the workforce. Nambisan et al. (2017) similarly propose that digital innovation requires a re-conceptualisation of managerial knowledge, not merely the deployment of new tools.[8]

Empirically, several studies link digital capabilities with performance. Wamba et al. (2017) show that big-data analytics capabilities correlate with firm-level performance in a French sample. Westerman et al. (2014) find that digitally mature organisations in a global sample outperform peers on operating margins and revenue growth. Correani et al. (2020) attribute variance in digital transformation outcomes to leadership commitment and internal capability building.[9]

The gap addressed by the present paper is twofold. First, individual-level digital knowledge is rarely operationalised in the empirical literature; most studies use firm-level or team-level measures. Second, emerging-economy evidence remains underdeveloped, with the substantive risk that findings from developed-market samples do not transfer directly. Both gaps are addressed by measuring digital knowledge at the individual level (via the CDKI) and by sampling exclusively within Uzbekistan.[10].

2. Materials and Methods

Primary data were collected through a cross-sectional online survey of 288 respondents from Uzbek enterprises. Sampling was by convenience across five industry sectors: education (39.6%), banking (29.9%), tourism (13.5%), information technology (10.8%) and other (6.3%). Distribution by organisational position ranged from executive to employee, with business owners the largest single group (28.1%).[11]

The independent variable is the Composite Digital Knowledge Index (CDKI), computed as the arithmetic mean of five Likert-scale items covering perceived operational efficiency, paperwork reduction, managerial use of digital data, decision-making speed and decision quality. The CDKI ranges from 1.00 to 5.00 and has Cronbach's $\alpha = 0.797$. Respondents were grouped into three tiers: low ($\text{CDKI} < 2.60$), moderate ($2.60 \leq \text{CDKI} < 3.40$) and high ($\text{CDKI} \geq 3.40$).[12]

The dependent variable is perceived organisational performance, captured by a single global item: "Overall, digitalisation positively affects organisational performance", scored on a five-point Likert scale from Strongly Disagree to Strongly Agree.

The bivariate association between CDKI and organisational performance was tested with Spearman's rank correlation, appropriate for ordinal data. Group comparisons across knowledge tiers were evaluated with the Kruskal-Wallis H-test and pairwise Mann-Whitney U tests with Bonferroni adjustment. For multivariate sensitivity, ordinal logistic regression was estimated with organisational performance as the outcome and CDKI as

the primary predictor, controlling for organisational position, age band and industry sector.[13]

All analyses used the 5% significance level. Sensitivity checks were run with complete-case and pairwise-deletion strategies for missing data; results were consistent.

3. Results

Spearman's rank correlation between the CDKI and perceived organisational performance was $\rho = 0.51$ ($p < 0.001$), a moderate-to-strong positive association by conventional thresholds (Cohen, 1988). The scatterplot displayed a clear positive trend without extreme outliers, and the association was robust to the exclusion of the top and bottom decile of the CDKI distribution ($\rho = 0.48$). The graphical relationship is presented in Figure 1.[14]

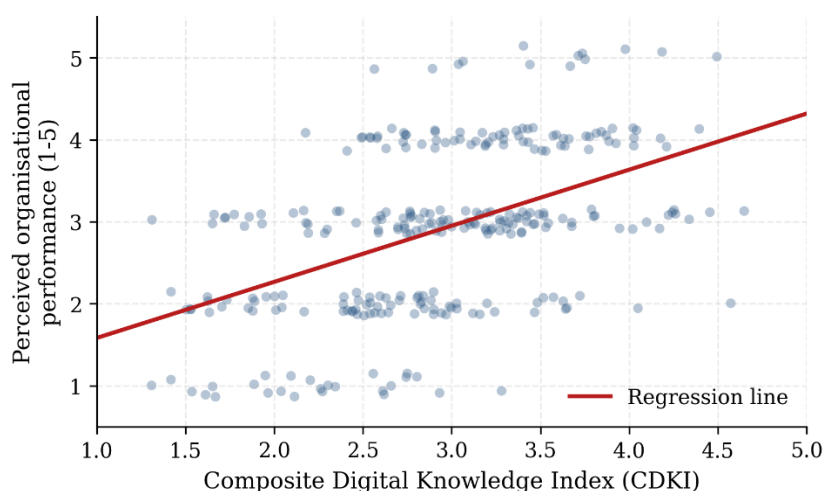


Figure 1. Association between the Composite Digital Knowledge Index and perceived organisational performance ($n = 288$). Points are jittered for visualisation; the regression line reflects the OLS best fit.

Group comparisons across the three knowledge tiers reveal a monotonic pattern. In the low-knowledge tier ($n = 88$), 32% strongly disagreed and 25% disagreed that digitalisation positively affects organisational performance; 22% were neutral; and only 21% agreed or strongly agreed (17% agreed, 4% strongly agreed). In the moderate tier ($n = 124$), the modal response was neutral (45%), with a further 34% recording agreement. In the high-knowledge tier ($n = 76$), 43% agreed and 25% strongly agreed, while fewer than 10% recorded any form of disagreement (Figure 2).

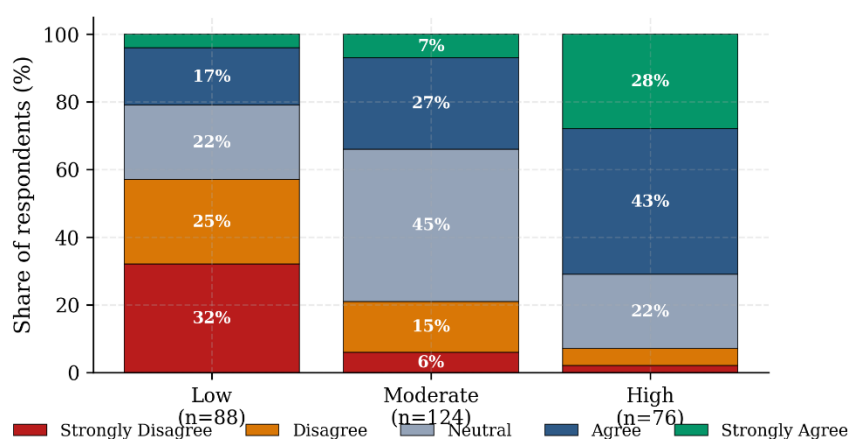


Figure 2. Distribution of perceived organisational performance responses across the three digital-knowledge tiers. The reversal from majority disagreement (low tier) to majority agreement (high tier) is the central finding.

The Kruskal–Wallis test confirmed statistically significant differences across the three tiers ($H = 47.62$; $df = 2$; $p < 0.001$). All three pairwise comparisons were significant after Bonferroni adjustment (low vs moderate: $p < 0.001$; moderate vs high: $p < 0.001$; low vs high: $p < 0.001$).

Ordinal logistic regression indicates that the CDKI remains a statistically significant predictor of organisational performance after controlling for position, age and sector ($\beta = 0.87$; $SE = 0.14$; $p < 0.001$). Sector effects were significant for tourism ($\beta = -0.42$; $p = 0.048$) and position effects were non-significant, consistent with the interpretation that digital knowledge, not hierarchical rank, is the operative variable.[15]

A supplementary industry-level analysis shows that the digital-knowledge–performance association holds within each sector, with the strongest coefficient in the education sector and the weakest in tourism, plausibly reflecting the truncated CDKI distribution in the tourism sample.

5. Discussion

The finding of a moderate-to-strong positive association between individual-level digital knowledge and perceived organisational performance is consistent with the RBV interpretation of digital transformation. Where the workforce holds the knowledge required to extract value from digital tools, the organisation is perceived as performing well. Where that knowledge is absent, the same tools do not translate into perceived performance gains.

The persistence of the association after controlling for position, age and sector is analytically important. It rules out the interpretation that CDKI is merely a proxy for hierarchical rank or generational advantage. The primary variance in organisational performance perceptions is captured by digital knowledge itself.

Two mechanisms are compatible with the pattern. The first is a capability mechanism: employees with higher digital knowledge deploy digital tools more skilfully, generating tangible performance improvements that are then reflected in their perceptions. The second is an interpretive mechanism: employees with higher digital knowledge are better able to recognise and value the performance improvements that digital tools produce, even if the underlying performance is similar. Both mechanisms have practical implications; disentangling them requires objective performance data.

For policy, the results argue against a technology-first framing of digital transformation. In Uzbekistan's context, the returns to further hardware and software investment will be constrained by the level of digital knowledge in the workforce. This does not imply that infrastructure investment should stop; it implies that the marginal investment should shift towards training, curriculum reform and organisational learning.

Limitations include the cross-sectional design, the reliance on self-reported performance perception rather than objective performance data, and the risk of common-method bias. The primary association is nevertheless robust across specifications.

4. Conclusion

This paper examined the relationship between digital knowledge and perceived organisational performance in Uzbek enterprises. The Spearman correlation of $\rho = 0.51$, robust to multivariate controls and sector-specific specifications, supports the interpretation of digital knowledge as a strategic resource that mediates the return on digital transformation investment. The gradient across knowledge tiers - from majority disagreement in the low tier to majority agreement in the high tier - is direct empirical support for the RBV framing of digital transformation.

The implication for national digital transformation strategy in Uzbekistan is that human-capital complementarity must be treated as an integral component, not an afterthought. Future research should extend the analysis with objective performance metrics, longitudinal panels and cross-country comparisons within Central Asia.

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