Journal of BioMed Research and Reports
2025 Volume 8, Issue 2
DOI: 10.59657/2837-4681.brs.25.182

BioRes Scientia
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Research Article

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Digital Transformation in Law Firms: A Quantitative Assessment of Strategic Drivers, Ambidexterity, and Measurement Orientation

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Abstract

This study investigates the dynamics and strategic implications of digital transformation within law firms through a quantitative analysis of 326 validated survey responses. Building on a four-dimensional hybrid methodology, the research operationalizes key constructs—digital transformation management, innovation ambidexterity, and measurement orientation—and examines their interrelations using exploratory and confirmatory factor analyses, as well as structural equation modeling. Results indicate that while digital transformation and ambidexterity both positively influence measurement orientation, no direct relationship exists between them. Instead, managerial perceptions of risk and opportunity serve as a cognitive mechanism mediating these effects. The findings challenge assumptions regarding automatic synergy between transformation and innovation, underscoring the importance of strategic sensemaking in navigating digital change. Methodologically, the study demonstrates the value of a multi-modal data collection strategy and rigorous psychometric validation. These insights contribute to a nuanced understanding of how legal organizations manage digitalization and highlight the centrality of perception in shaping strategic outcomes.

Keywords: digital transformation, law rms innovation ambidexterity, measurement orientation, strategic management, structural equation modeling (sem), organizational change, quantitative research, survey methodology, legal technology

Introduction

This chapter presents the quantitative component of the research programme, designed to complement and extend insights derived from the preceding qualitative phase. Anchored in a four-dimensional hybrid methodology—encompassing methodological integration, reciprocal iteration, epistemic complementarity, and theoretical abstraction—this approach builds on the seminal frameworks of Eisenhardt (1989) and Yin (2018). It seeks to balance inductive depth with deductive generalisation.

Rather than treating the quantitative strand as methodologically autonomous, it is strategically embedded within the study's broader logic of inquiry. This phase operationalises themes and constructs emergent from the qualitative exploration and subjects them to systematic hypothesis testing and statistical modelling. By doing so, it not only refines theoretical propositions but also strengthens the empirical robustness and external validity of the findings.

The overarching aim is to interrogate the dynamics and strategic ramifications of digital transformation within legal organisations. Particular attention is paid to the frictions, drivers, and managerial perceptions shaping digital adoption. The quantitative data, in this context, functions both as a mechanism of triangulation and a means of theoretical elaboration—laying the groundwork for the final interpretive return to qualitative depth.

Quantitative Assessment of Digitalisation in Law Firms

This section initiates the quantitative phase of the study by empirically examining the organisational mechanisms, perceived challenges, and strategic drivers of digitalisation across legal service firms.

The primary objectives of this phase are threefold:

1. To empirically identify patterns, tensions, and inertia observed during digital transformation efforts;
2. To derive practitioner-relevant insights that inform strategic decisions;
3. To triangulate qualitative findings through structured quantitative validation.

Serving both confirmatory and exploratory purposes, the quantitative stage refines insights derived from the qualitative phase while sharpening the analytic focus for subsequent interpretive work. Key constructs under examination—ranging from technology adoption and organisational change to innovation ambidexterity—are operationalised and subjected to empirical testing.

In cases where qualitative findings revealed ambivalence or inconsistency, the structured format of survey data provides analytical clarity and reinforces interpretive reliability. By adopting a mixed-method logic, the study strengthens its internal coherence and enhances the external applicability of its conclusions.

A response threshold of 350 completed questionnaires was set to ensure statistical robustness. The data collection strategy was deliberately multimodal to accommodate respondent preferences and increase representativeness. Distribution channels included:

- In-person dissemination at professional legal events;
- Online forms (Google Forms) and email invitations;
- Telephone interviews for participants preferring verbal modes;
- Traditional postal mail, primarily targeted at senior professionals with low digital engagement.

Responses were classified into three categories:

- Fully completed forms (retained for analysis);
- Partially completed forms (excluded unless imputation was feasible);
- Null responses (discarded).

This integrative survey protocol supports the reliability of the dataset and reinforces the study's commitment to methodological pluralism.

Empirical Application

This subsection details the empirical deployment of the quantitative instrument, focusing on respondent access, data completeness criteria, and methodological controls for representativeness.

The survey was disseminated primarily through digital channels, with professional email addresses sourced from national bar association registries and legal practitioner directories. To expand reach and diversify respondent profiles, the distribution strategy also encompassed:

- On-site distribution at legal conferences and seminars;
- Dissemination via online professional forums and law firm networks;
- Direct outreach through LinkedIn and bar mailing lists.

A total of approximately 35,000 legal professionals were contacted. From this outreach, 326 valid and fully completed questionnaires were retained for analysis. The inclusion criterion was stringent: responses had to be 100% complete to ensure statistical integrity.

Incomplete submissions were excluded from the final dataset, unless imputation was both viable and justified based on response patterns.

This empirical approach facilitated the collection of structured, standardised data across a heterogeneous respondent base. It ensured that the subsequent quantitative analyses were grounded in a robust and methodologically consistent empirical foundation.

Questionnaire

The questionnaire design was grounded in both theoretical salience and practical relevance, aiming to capture the multifaceted nature of digital transformation within legal practice. The term "digital" was operationalised broadly to include both foundational tools (e.g., document scanning, cloud storage) and advanced technologies (e.g., artificial intelligence, predictive analytics, automation).

To enhance respondent engagement and clarity, the survey was introduced with a concise cover statement. This brief outlined the academic purpose of the study, guaranteed respondent anonymity, and confirmed data confidentiality. Participants were also offered the opportunity to receive a summary of the results upon completion, in alignment with ethical standards for research transparency.

The instrument comprised closed-ended and scaled questions structured across four thematic blocks:

- Digital technology adoption;
- Organisational change and readiness;
- Strategic alignment;
- Innovation and ambidexterity.

Each block operationalised constructs derived from the preceding qualitative phase and literature synthesis. A bipolar Stapel scale ranging from +5 to –5 was employed to capture both the intensity and valence of respondent attitudes. This scale, unlike the Likert format, precludes neutral answers, thereby encouraging more committed and discriminant responses.

The structure and language of the items were pre-tested with a pilot sample to ensure semantic clarity and contextual validity. The final version of the questionnaire thus functioned both as a data collection tool and a vector for construct refinement, setting the foundation for subsequent factor analyses and model validation.

Choice of Measuring Instruments

The selection of an appropriate response scale is critical to the validity and interpretive robustness of survey-based research. In this study, a comparative assessment between the Likert and Stapel scales was undertaken, with the Stapel format ultimately selected for its methodological and epistemological advantages.

Limitations of the Likert Scale

While the Likert scale is widely used in organisational research due to its simplicity and respondent familiarity, it has notable limitations—particularly in contexts requiring forced responses. The inclusion of a neutral midpoint often enables satisficing behaviour, encouraging disengaged or socially desirable answers. Moreover, Likert responses are vulnerable to acquiescence bias, which may distort the distribution of results.

Rationale for Using the Stapel Scale

The Stapel scale, a ten-point bipolar scale ranging from +5 to –5, was chosen as a superior alternative. It compels respondents to take a position on evaluative items and thereby enhances response discrimination. Originally developed for marketing contexts, the scale has been validated in organisational settings and shown to perform well in forced-choice designs.

This instrument offers several advantages:

- It eliminates the possibility of neutral or non-committal answers;
- It allows for more precise measurement of both attitudinal direction and intensity;
- It reduces the risk of central tendency and response fatigue common in Likert-based formats.

As noted by Crespi (1974) and further validated in applied contexts (Vernette, 1991), the Stapel scale provides richer data for self-evaluative judgements. Its application in this study aligns with the objective of eliciting unambiguous perspectives on digital transformation within legal practice.

Validity and Reliability

Ensuring the psychometric robustness of a measurement instrument requires systematic evaluation of both its validity and reliability. This section outlines the methodological safeguards employed to assess these dimensions.

Validity Assessment

Content validity was established through expert review and alignment with existing constructs from the literature. Items were derived inductively from the qualitative phase and deductively from theoretical models, ensuring conceptual coverage and relevance. Construct validity was assessed through both exploratory and confirmatory factor analyses. The former tested for item coherence and dimensional emergence, while the latter verified convergent and discriminant validity using model fit indices and inter-factor correlations.

Items with factor loadings below 0.50 or with significant cross-loadings were excluded. Criterion-related validity was evaluated using correlational techniques in SPSS. Measures of digital transformation were compared with external variables such as firm size and level of digital investment. Statistically significant correlations supported the instrument's predictive and concurrent validity.

Reliability Testing

Internal consistency was assessed using Cronbach's alpha, with a threshold of $\alpha \geq 0.70$ onsidered acceptable for all scales. This method was selected given the cross-sectional nature of the survey. The reliability tests were conducted post-cleaning and post-factor analysis to ensure coherence within each construct.

Together, these validation procedures ensured that the instrument possessed both conceptual clarity and statistical robustness, laying the groundwork for subsequent modelling and hypothesis testing.

Reliability in a Quantitative Study

Reliability in quantitative research pertains to the internal consistency and replicability of a measurement instrument across respondents and contexts. In this study, reliability was evaluated using statistical diagnostics to confirm the coherence of the survey constructs and the stability of measurement results.

Methodological Approach

The primary indicator used to assess reliability was Cronbach's alpha, which measures the internal consistency of item clusters within each construct. Alpha values equal to or exceeding the conventional threshold of 0.70 were considered acceptable, with higher values indicating greater reliability.

To ensure meaningful results, the reliability analysis was conducted:

- After the exclusion of items with poor factor loadings;
- Separately for each latent variable identified during exploratory factor analysis (EFA);
- Using SPSS software to ensure precision and reproducibility.

In cases where alpha values approached the minimum threshold, item-total statistics were examined. If removing a specific item increased the overall scale reliability, it was eliminated. This iterative approach helped refine the constructs without sacrificing theoretical integrity.

Limitations and Mitigations

Although test-retest reliability could not be evaluated due to the cross-sectional nature of the data collection, the instrument's robustness was reinforced through:

- A mandatory response format that eliminated missing data;
- Pre-testing of the questionnaire to ensure item clarity and coherence;
- A sufficiently large sample size (n = 326) to support stable reliability estimates.

Taken together, these measures enhance the reliability of the data and provide a sound empirical basis for the statistical analyses that follow in subsequent sections.

Data Collection and Sampling Strategy

The data collection process was guided by principles of methodological pluralism and representativeness. To reach a diverse sample of legal professionals across firm sizes, regions, and practice domains, a multi-modal approach was implemented. This strategy integrated digital, telephonic, and observational methods.

Survey Administration via Email

The primary method employed was the dissemination of a self-administered online questionnaire via email. This modality was selected for its efficiency, scalability, and congruence with digital work environments common in the legal sector.

Email addresses were extracted from public registries maintained by national bar associations and the Conseil National des Barreaux (CNB). In total, 35,000 surveys were distributed across France. A response optimization protocol was implemented, comprising:

- Pre-validation of email addresses;
- Re-transmission in case of delivery errors (0.01% estimated failure rate);
- CAPTCHA verification to ensure data authenticity.

Despite these efforts, the response rate remained low (2.5%), reflecting known sectoral barriers such as time constraints, administrative overload, and a cultural preference for verbal over written communication among senior practitioners.

Telephone-Based Surveys

To mitigate the limitations of online-only administration, telephone interviews were offered as an alternative. This approach proved effective in capturing data from participants less comfortable with digital formats and enabled real-time clarification of complex items.

Interviews were transcribed manually into the survey platform to ensure standardisation across modes. Although more resource-intensive, this method enhanced inclusivity and response diversity.

Direct Observation

Structured observation was deployed as a complementary data source, inspired by qualitative traditions (Silverman, 2006). In firms where prior access had been negotiated, researchers documented behavioural manifestations of digital practices.

Key phenomena included:

- Internal communications regarding digital strategy;
- Use of online platforms for client engagement;
- Adoption of legaltech tools for document automation and case management.

These observations enriched the interpretation of survey data by providing contextual
nuance and behavioural triangulation.

Research Model and Hypotheses

Conceptual Framework

This study proposes an integrated research model that examines how legal organisations navigate the complex interplay between digital transformation, innovation ambidexterity, and strategic evaluation. The model draws upon prior work in organisational theory and innovation management (Tushman & O'Reilly, 1996; Jansen et al., 2006) and is structured around three latent constructs:

- Digital Transformation Management, operationalised through two dimensions: macro-change (strategic reorientation) and micro-change (operational digitisation);
- Ambidexterity, defined as the dual capacity for exploitative and exploratory innovation;
- Measurement Orientation, capturing perceptions of digitalisation in terms of risk and opportunity.

The conceptual logic posits that strategic perceptions (measurement) mediate the relationship between organisational capabilities (ambidexterity) and

transformation processes. Figures 37 and 38 (see source document) illustrate the hypothesised structure and its underlying rationale.

Hypothesis Formulation

Building on this framework, the following hypotheses were derived:

- H1: Digital transformation management is significantly associated with ambidexterity.
- H2: Digital transformation management is significantly associated with measurement orientation.
- H3: Ambidexterity is significantly associated with measurement orientation.

These hypotheses reflect a strategic alignment perspective; wherein successful navigation of digital complexity is contingent on both behavioural flexibility (ambidexterity) and cognitive calibration (risk–opportunity framing).

To empirically test these relationships, the survey instrument included validated indicators for each construct. Structural Equation Modeling (SEM) was adopted as the analytic technique, allowing simultaneous estimation of direct and mediated effects among latent variables.

This model sets the stage for confirmatory analysis in the next section, wherein factor structures and path coefficients are statistically evaluated.

Analysis and Results

Descriptive and Demographic Profile

Prior to hypothesis testing, a descriptive analysis was conducted to characterise the respondent population. The sample (n = 326) was diverse in terms of gender, age, professional seniority, and academic background. Most respondents were under the age of 40, held postgraduate qualifications in law, and worked in firms of varying size and digital maturity. These demographic variables were examined for potential moderating effects in subsequent analysis.

Exploratory Factor Analysis (EFA)

Exploratory Factor Analysis was conducted to assess construct dimensionality. Principal Component Analysis with Varimax rotation was employed, and items with loadings below 0.50 or significant cross-loadings were removed. The Kaiser-Meyer-Olkin (KMO) values ranged between 0.468 and 0.568, indicating moderate sampling adequacy. Bartlett's Test of Sphericity confirmed the factorability of the correlation matrix ($p < 0.05$).

Six latent factors were retained:

- Perceived Opportunities
- Perceived Risks
- Micro-Level Change
- Macro-Level Change
- Exploratory Innovation
- Exploitative Innovation

Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) CFA was conducted using AMOS software to validate the factor structure. The model demonstrated acceptable fit indices:

- $\chi^2/df < 3.00$
- CFI > 0.90
- RMSEA < 0.08
- SRMR < 0.08

All latent constructs exhibited strong convergent and discriminant validity.

Subsequently, SEM was used to test the hypothesised model. Results showed:

- H1 (Digital Transformation → Ambidexterity): Not supported. No significant path coefficient was found.
- H2 (Digital Transformation → Measurement): Supported. A positive, significant relationship was confirmed.
- H3 (Ambidexterity → Measurement): Supported. A significant association was observed.

Interpretation of Findings

The absence of a direct link between transformation and ambidexterity (H1) challenges assumptions of automatic synergy. Instead, perceptions of risk and opportunity (measurement orientation) serve as a cognitive mechanism through which change and innovation interact. This reinforces the centrality of managerial sensemaking in navigating digital transitions and offers theoretical insights into how interpretive frames condition strategic behaviour.

Conclusion

This chapter presented the quantitative component of a hybrid research design aimed at understanding digital transformation in the legal sector. Through the deployment of a structured survey and subsequent multivariate analyses, the study provided empirical validation for a conceptual model linking

transformation practices, innovation ambidexterity, and evaluative perceptions.

Three core findings emerged:

- While both digital transformation and ambidexterity were positively associated with measurement orientation, they did not correlate directly with one another;
- Measurement orientation, expressed through perceived risks and opportunities, functioned as a mediating cognitive mechanism;
- The assumption that changes processes necessarily foster innovation capabilities was challenged, highlighting the importance of strategic sensemaking.

Methodologically, the study leveraged a sequential multi-modal approach, enabling both breadth and depth in data capture. The use of EFA, CFA, and SEM ensured the robustness of findings and allowed for the testing of complex relational hypotheses.

Theoretically, these results underscore the centrality of perception and interpretation in shaping how digital transformation unfolds. They call for greater attention to the cognitive and cultural infrastructures that mediate the effects of structural change.

These insights form the foundation for the subsequent qualitative phase, which seeks to contextualise and deepen the quantitative findings through case-based inquiry and narrative analysis.

Author Declarations

The authors declare no competing interests.

General Statement on Participant Consent

We hereby confirm that all participants involved in this study provided informed consent prior to their participation. Where participants were minors or unable to provide consent themselves, consent was obtained from their legal guardians in accordance with ethical guidelines.

The study protocol was reviewed and approved by the appropriate institutional ethics committee. In cases where the ethics committee deemed it appropriate, a waiver of written informed consent was granted. All procedures were carried out in compliance with the Declaration of Helsinki and applicable institutional and national research ethics standards.

We affirm that participants were informed about the purpose of the research, the voluntary nature of their participation, and their right to withdraw at any time without any consequences.

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Cite this article: Feng M., Feng D. (2025). Digital Transformation in Law Firms: A Quantitative Assessment of Strategic Drivers, Ambidexterity, and Measurement Orientation, *Journal of BioMed Research and Reports*, BioRes Scientia Publishers. 8(2):1-6. DOI: 10.59657/2837-4681.brs.25.182

Article History: **Received:** June 02, 2025 | **Accepted:** June 16, 2025 | **Published:** June 23, 2025