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Navigating Strategic Change: The Role of Digital Transformation and Agile Leadership in Driving Social Innovation and Sustainable Organizational Resilience

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ABSTRACT

Background. Organizations facing technological disruption and evolving societal expectations must adapt strategically without compromising long-term stability or stakeholder well-being. While digital transformation expands organizational capabilities, its contribution to resilience ultimately depends on leadership practices and the capacity to generate socially valuable solutions, as technology adoption alone is unlikely to ensure durable resilience without adaptive leadership and socially responsive innovation.
Purpose. This study examines how digital transformation and agile leadership jointly shape social innovation and sustainable organizational resilience, proposing an integrated framework that connects strategic transformation, collective value creation, and long-term organizational capacity under conditions of uncertainty and institutional change.
Method. A quantitative research design is proposed, utilizing organizational survey data, validated multidimensional scales, and structural equation modeling (SEM) to assess direct, indirect, and interaction effects among variables such as digital adaptability, leadership responsiveness, collaborative problem-solving, and organizational continuity, while systematically accounting for organizational size and sector.
Results. Because the proposed model identifies theoretical expectations and testable relationships rather than established empirical findings, formal statistical results are not yet reported; empirical testing across diverse organizational contexts is required to determine the strength, direction, and boundary conditions of these hypothesized relationships.
Conclusion. The study concludes that achieving sustainable organizational resilience requires the simultaneous integration of technological adaptability and agile leadership mediated through social innovation, providing a conceptual foundation to inform evidence-based strategic management practices during periods of disruption.

KEYWORDS

Agile Leadership; Digital Transformation; Organizational Resilience; Social Innovation; Sustainable Development.

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INTRODUCTION

Organizations face technological disruption, stakeholder expectations, and environmental pressures that challenge established operating models. Digital transformation extends beyond technology adoption to redesign organizational processes, capabilities, and relationships. Strategic change creates tensions between efficiency and responsibility. Understanding these demand

requires leadership, social value creation, and the conditions supporting resilience beyond technology investment.

Digital technologies can improve coordination and responsiveness, but their effects depend on implementation (Cosa, 2024). Employees may experience collaboration alongside uncertainty about roles and authority. Agile leadership offers a response through iterative learning, distributed problem solving, and adjustment to feedback (Fang dkk., 2024). Flexibility without strategic direction may increase fragmentation rather than adaptability.

Social innovation introduces a dimension of transformation addressing unmet needs and inclusive solutions (Al-Hajri dkk., 2025). Community and employee initiatives may connect renewal with sustainability. Resilience involves maintaining essential functions while adapting under disruption (Bhardwaj dkk., 2025). The relationship among digital transformation, agile leadership, social innovation, and sustainable resilience merits systematic investigation. Organizations often invest in digital systems without establishing lasting adaptive capacity (Probohudono dkk., 2025). Better data may coexist with rigid hierarchies, low employee participation, or limited attention to external stakeholders (Tsvasman, 2024). Digital maturity is not synonymous with resilience. Research must clarify how technology shapes responses to uncertainty.

Leadership poses problems because agile practices may support rapid experimentation without benefiting society (Khamiliyah dkk., 2025). Short cycles may privilege performance over participation. Decentralization also complicates accountability. Examining agile leadership as a conditional capability is necessary to explain strategic change. The role of social innovation matters when transformation prioritizes productivity (Fletcher dkk., 2026). Digital services do not necessarily create societal value. Social innovation may operate as a mediating process, depending on its measurement (Pancote dkk., 2026). A credible model must distinguish innovation outputs from resilience outcomes without implying causation.

This study aims to test a model linking digital transformation, agile leadership, social innovation, and sustainable organizational resilience (González-Reyes dkk., 2026). Digital transformation concerns capabilities rather than ownership. Agile leadership is examined through responsiveness, experimentation, and collaborative decision making (Ismail Al-Alawi dkk., 2024). The proposed relationships will be evaluated as hypotheses, allowing their direction and strength to be determined through evidence rather than assumed in advance.

The research further seeks to investigate whether social innovation mediates the relationships between digital transformation, agile leadership, and resilience (M dkk., 2024). This objective addresses how internal organizational capabilities might generate solutions valued by employees, communities, and other stakeholders (Gregory dkk., 2026). The analysis will distinguish direct associations from indirect pathways while considering alternative explanations (Princes dkk., 2024). Organizational size and sector will be examined as contextual factors that may influence the relevance of particular capabilities.

A final objective is to identify implications for strategic management without equating statistical associations with proven interventions (A/P Anthonysamy dkk., 2025). The proposed quantitative design will employ validated measures and structural modeling, subject to adequate sampling and measurement assessment (Cao dkk., 2026). Findings are expected to clarify which proposed pathways receive empirical support and where uncertainty persists. Such evidence could inform organizational decisions concerning capability development, leadership practice, and responsible innovation.

Existing scholarship examines digital transformation in relation to organizational performance, change management, and dynamic capabilities (Sun dkk., 2024). Separate research

considers agile leadership as an approach to uncertainty and collaborative work (Takyi dkk., 2025). These perspectives provide useful foundations, but their combined implications for socially oriented innovation and sustainability focused resilience require closer theoretical specification (Ko dkk., 2025). The relevant gap concerns the relationships among these constructs, not an absence of research on any individual concept.

Research on organizational resilience also spans operational continuity, recovery, adaptation, and transformation, often using different time horizons and indicators (Dall'Acqua, 2025). These variations can obscure whether digitalization predicts short term responsiveness or genuinely sustained organizational capacity (Kim dkk., 2026). Studies emphasizing performance during disruption may overlook stakeholder consequences. An integrated framework should specify the dimensions of resilience being assessed and avoid collapsing sustainability into operational survival.

Another analytical gap concerns the position of social innovation within organizational transformation models (Kim dkk., 2026). Social initiatives may be interpreted as outcomes, independent capabilities, or mechanisms linking internal change with external value (Kim dkk., 2026). These alternatives imply different empirical relationships and policy recommendations (Kim dkk., 2026). A clearly specified mediation model, examined alongside plausible competing explanations, could sharpen understanding of when technologically enabled change contributes to resilience through socially responsive organizational practices.

The proposed novelty lies in articulating a testable pathway from digital and leadership capabilities to sustainable resilience through social innovation (Senbursa, 2026). None of the individual constructs is new, and combining familiar variables does not itself establish originality (Fletcher & Griffiths, 2025). The contribution instead depends on careful conceptual differentiation, transparent measurement, and examination of indirect relationships (Kotorov dkk., 2025). This approach positions social innovation as a theoretically justified mechanism rather than an attractive but unexplained addition to a model.

The study is justified by the practical risk of confusing digital expansion with meaningful organizational progress (Liu dkk., 2024). Technology investment can produce efficiency while leaving stakeholder vulnerability and structural rigidity unresolved. Agile leadership likewise needs evaluation against accountability and longer term goals (Omol, 2024). Investigating these capabilities together may provide a more balanced account of strategic change, particularly when adaptation must protect social relationships and institutional continuity.

The anticipated contribution extends to theory, methodology, and management practice (Ghobakhloo dkk., 2024). The framework offers a structured basis for testing links among transformation capabilities, leadership, social value creation, and resilience within identifiable organizational contexts (Dian dkk., 2024). Its conclusions will remain sensitive to research design, measurement quality, and sectoral variation. Such caution is essential for producing evidence that advances scholarly explanation without promising that any single leadership approach or technological strategy guarantees sustainable resilience.

RESEARCH METHODOLOGY

This study proposes a quantitative, explanatory research design to examine relationships among digital transformation, agile leadership, social innovation, and sustainable organizational resilience (Sharabati dkk., 2024). Digital transformation and agile leadership are specified as predictor constructs, social innovation as a potential mediator, and sustainable organizational resilience as the outcome (Hu dkk., 2024). The model estimates direct and indirect associations

while accounting for organizational size, sector, and environmental uncertainty. Partial least squares structural equation modeling (PLS-SEM) is selected because the investigation emphasizes prediction alongside assessment of a theoretically specified mediation framework. The research will use a time-lagged survey, separating predictor, mediator, and outcome measurements to reduce immediate response consistency, although temporal separation cannot establish causality (Bai dkk., 2024). The organizational unit, rather than the individual employee, is the intended level of theoretical inference. Hypotheses, construct definitions, exclusion rules, and analytical decisions will be documented before examining the final dataset. Any claims about strategic change will be limited to associations supported by the implemented design.

The target population consists of organizations undertaking digital transformation initiatives across selected service, manufacturing, and public-interest sectors within a clearly defined geographical setting. Eligible organizations must demonstrate an identifiable digital initiative and possess personnel knowledgeable about leadership practices, social innovation activities, and resilience planning. A stratified recruitment strategy will seek variation in sector and organizational size, with purposive selection of informed respondents within participating organizations. Wherever feasible, at least two respondents per organization will contribute complementary assessments, reducing dependence on a single manager's perspective. One organizational representative will report technology and leadership practices, while another will describe social innovation and resilience processes. Aggregation will occur only after checking within-organization agreement and relevant reliability statistics; otherwise, responses will be analyzed at their observed level with suitable multilevel safeguards. The target number of organizations will be justified through prospective power analysis for the smallest theoretically important path, expected attrition, and model complexity. Actual sample size, response rates, missingness, and sector distribution will be reported after data collection. Recruitment records will document nonparticipation and reasons for withdrawal where voluntarily provided. The study will also compare participating and nonparticipating organizations using available aggregate characteristics, acknowledging that unobserved differences may remain. Survey invitations and reminders will be standardized to minimize inconsistent recruitment procedures.

Data will be gathered using a structured questionnaire incorporating established, context-adapted measures with five-point Likert response options. Digital transformation indicators will assess process integration, data-enabled decisions, digital coordination, and organizational adaptability. Agile leadership items will address responsiveness, experimentation, distributed problem-solving, and feedback practices. Social innovation measures will capture the development and implementation of solutions addressing stakeholder needs, while resilience items will examine anticipation, continuity, recovery, and adaptive renewal, including social and environmental considerations. Expert review and cognitive interviews will evaluate content relevance and interpretability before pilot administration. Translation and back-translation will be conducted where multiple languages are used. Measurement quality will be examined through indicator loadings, composite reliability, rho_A, average variance extracted, and heterotrait-monotrait ratios. Collinearity and construct distinctiveness will be assessed before structural testing. Questionnaire wording will avoid conflating social innovation with resilience or treating sustainability as a synonym for short-term performance. A procedural and statistical assessment of common-method bias will accompany the use of multiple informants.

Institutional approval and organizational permissions will precede recruitment, informed consent, and confidential survey administration. The first survey wave will collect organizational characteristics, digital transformation indicators, and agile leadership measures. A second wave will

assess social innovation, followed by a third wave measuring resilience after a prespecified interval suitable for the study context. Matching codes will connect responses without exposing personal identities. Data screening will examine duplicates, incomplete responses, nonresponse patterns, careless answering, and organizational nesting. Missing values will be addressed using a documented approach appropriate to their extent and plausible mechanism. PLS-SEM analysis will first assess measurement validity and reliability, followed by structural paths, explained variance, effect sizes, and predictive performance. Bootstrapping at the organizational level will estimate uncertainty for direct and mediated relationships. Alternative models will examine reversed associations and potential confounding, while subgroup analyses will be conducted only when sample sizes and measurement invariance permit. Results will report confidence intervals and practical magnitude rather than relying on statistical significance alone. Time-lagged associations will not be described as causal effects; stronger causal conclusions would require experimental or longitudinal identification strategies.

RESULT AND DISCUSSION

The illustrative dataset comprised 180 organizations representing manufacturing, service, and public-interest sectors undergoing digital transformation initiatives. The simulated sample included 70 service organizations (38.9%), 60 manufacturing organizations (33.3%), and 50 public-interest organizations (27.8%). Organizational representatives were assumed to provide complementary assessments of digital transformation, agile leadership, social innovation, and sustainable organizational resilience. The proposed analysis employed organizational-level observations after assessing the suitability of aggregating multiple respondents. Descriptive statistics indicated relatively favorable perceptions of digital transformation and agile leadership, while social innovation showed greater variability across organizational contexts. These patterns provide an illustrative basis for examining differences in organizational capabilities.

Table 1. Simulated Descriptive Statistics of Research Variables

Variable	N	Mean	SD	Minimum	Maximum
Digital Transformation (DT)	180	3.89	0.67	1.80	5.00
Agile Leadership (AL)	180	3.76	0.71	1.60	5.00
Social Innovation (SI)	180	3.58	0.74	1.40	5.00
Sustainable Organizational Resilience (SOR)	180	3.72	0.69	1.60	5.00

The simulated descriptive distribution suggests that technological capability and leadership adaptability do not necessarily develop at identical rates. Digital transformation recorded the highest mean score of 3.89, followed by agile leadership at 3.76 and sustainable organizational resilience at 3.72. Social innovation showed the lowest mean of 3.58, suggesting a potential discrepancy between internal organizational modernization and socially oriented innovation. The relatively larger standard deviation for social innovation indicates greater heterogeneity in the illustrative organizational sample. These differences do not independently establish statistically significant gaps but provide a preliminary explanation for examining the proposed mediating role of social innovation.

The simulated descriptive results illustrate how organizations may develop digital capabilities more rapidly than mechanisms for generating broader social value. Investments in data systems, workflow automation, and digital communication can improve operational coordination without necessarily producing solutions that address stakeholder needs. Agile leadership may support responsiveness through experimentation, feedback, and distributed decision-making, but its contribution depends on how these practices are embedded within organizational structures. The lower illustrative social innovation score suggests that technological modernization and leadership flexibility should be distinguished from demonstrated social outcomes. This interpretation remains theoretical until supported by observed organizational practices and independently assessed innovation activities.

The relationship between digital transformation and organizational resilience also requires attention to contextual differences. Large organizations may possess greater technological resources, whereas smaller organizations may respond more quickly because of less complex decision structures. Sectoral conditions can further influence whether digital investments support operational continuity or generate additional dependence on technological infrastructure. The proposed model therefore incorporates organizational size and sector as control variables rather than assuming uniform transformation pathways. These considerations help explain why descriptive averages alone provide limited evidence concerning resilience. Organizational capability must be evaluated through its relationship with adaptive processes, stakeholder responses, and sustained performance under changing conditions.

The illustrative measurement model was assessed using indicator reliability, internal consistency, convergent validity, and discriminant validity criteria commonly applied in PLS-SEM. Simulated composite reliability values ranged from 0.88 to 0.93, while average variance extracted values ranged from 0.61 to 0.70. These hypothetical results exceed frequently applied minimum thresholds of 0.70 for composite reliability and 0.50 for convergent validity. The proposed evaluation also requires inspection of indicator loadings, rho_A, and heterotrait-monotrait ratios before structural relationships can be interpreted confidently. Acceptable reliability does not automatically establish conceptual validity, particularly when constructs contain overlapping dimensions of organizational adaptability.

Table 2. Simulated Measurement Model Assessment

Construct	Cronbach's α	Composite reliability	AVE	Maximum HTMT
Digital Transformation	0.89	0.92	0.68	0.79
Agile Leadership	0.87	0.91	0.65	0.82
Social Innovation	0.90	0.93	0.70	0.81
Sustainable Organizational Resilience	0.84	0.88	0.61	0.82

The proposed discriminant validity assessment indicated maximum illustrative HTMT values below 0.85, suggesting that the four constructs could be empirically distinguishable under appropriate measurement conditions. Digital transformation describes organizational technological integration, whereas agile leadership concerns behavioral and managerial responsiveness. Social innovation represents the development of socially valuable solutions, while sustainable resilience concerns the capacity to anticipate, withstand, and adapt to disruption. Their conceptual separation is essential because poorly differentiated measures could exaggerate structural relationships. A

completed empirical analysis would also need to establish whether organizational responses can legitimately be aggregated and whether measurement properties remain comparable across sectors.

The illustrative structural model indicated positive associations between digital transformation, agile leadership, and social innovation. The hypothetical standardized coefficient linking digital transformation with social innovation was $\beta = 0.42$, while agile leadership showed $\beta = 0.36$. Social innovation was positively associated with sustainable organizational resilience at $\beta = 0.48$. Direct pathways from digital transformation and agile leadership to resilience remained positive, with coefficients of 0.18 and 0.21, respectively. These simulated estimates illustrate a structural configuration in which technological and leadership capabilities may relate to resilience both directly and through social innovation. They are not calculated from survey observations.

The hypothetical mediation analysis yielded indirect coefficients of approximately 0.202 for digital transformation and 0.173 for agile leadership through social innovation. The simulated structural model explained 49% of the variance in social innovation and 64% of the variance in sustainable organizational resilience. These coefficients suggest a potentially meaningful mediating role for social innovation, although explained variance cannot establish causal mechanisms. The direct pathways remained positive in the constructed example, representing partial statistical mediation rather than complete mediation. Actual interpretation would require organizational-level bootstrapping, examination of collinearity, predictive assessment, and consideration of alternative models capable of producing similar covariance patterns.

The proposed relationships illustrate how digital transformation and agile leadership may operate as complementary organizational capabilities. Digital infrastructure can enable faster information exchange, integrated decision-making, and communication across organizational boundaries. Agile leadership may facilitate the use of these capabilities by encouraging experimentation, employee involvement, and responsiveness to emerging challenges. Their association with social innovation can be understood through opportunities for collaborative problem-solving and stakeholder engagement. The model does not assume that technological capability automatically creates innovation. Organizational processes must translate information and flexibility into solutions addressing identifiable social needs. These mechanisms remain hypotheses requiring behavioral and longitudinal evidence.

The relationship between social innovation and sustainable resilience deserves particular attention because organizational adaptation may involve more than maintaining existing operations. Socially responsive initiatives can strengthen stakeholder relationships, improve institutional legitimacy, and expand collaborative capacity during disruption. These outcomes may contribute to resilience when they support continuity and responsible organizational renewal. The simulated structural coefficients illustrate this possibility but do not establish that social innovation causes resilience. Reverse relationships are equally plausible because resilient organizations may possess greater resources for experimentation. Testing competing explanations is therefore necessary before identifying social innovation as a demonstrated causal pathway.

An illustrative organizational case was developed to examine how the proposed relationships might appear in practice. The hypothetical organization was a medium-sized service provider experiencing operational pressure from changing customer expectations and disruptions to conventional delivery systems. Management introduced integrated digital communication tools, data-supported service monitoring, and flexible work coordination. Agile leadership practices were represented through cross-functional teams, regular feedback meetings, and decentralized operational decisions. These initiatives provided a conceptual environment for evaluating whether

digital integration and responsive leadership could support socially oriented innovation. The case is fictional and does not constitute an observed organizational transformation.

The illustrative organization subsequently developed a community-oriented digital service designed to improve access for underserved stakeholders. Employee teams used digital information and iterative consultation to identify barriers and refine service delivery. The scenario assumed improvements in stakeholder communication, service accessibility, and operational flexibility, although no observed performance indicators were available. Its analytical value lies in showing how social innovation could connect internal organizational capabilities with external value creation. The case also highlights the possibility that digital transformation may generate efficiency gains without necessarily producing inclusive outcomes unless leadership practices encourage participation and stakeholder responsiveness.

The hypothetical case illustrates a plausible sequence through which digital transformation and agile leadership may support sustainable organizational resilience. Digital integration improves the availability of operational information, while agile leadership encourages employees to interpret that information collaboratively. Social innovation emerges when organizational learning is directed toward stakeholder problems rather than restricted to internal productivity improvements. Resilience may subsequently benefit from stronger stakeholder relationships and more adaptable service arrangements. This sequence provides a theoretical explanation for the proposed mediation model. Its credibility depends on observing temporal ordering and excluding competing influences rather than assuming that successive organizational activities represent causal relationships.

The case also demonstrates potential obstacles to achieving sustainable resilience. Digital initiatives can increase dependence on specialized systems, introduce cybersecurity concerns, and create unequal access among employees or stakeholders. Agile practices may produce uncertainty when responsibilities and decision authority are insufficiently defined. Social innovation can require financial resources and stakeholder collaboration that organizations cannot always sustain. These constraints explain why the proposed relationships should not be interpreted as universally positive or unconditional. Effective strategic change depends on implementation quality, organizational context, and the capacity to balance short-term responsiveness with long-term institutional commitments.

The illustrative findings collectively suggest that digital transformation and agile leadership may contribute to sustainable organizational resilience through both direct organizational capabilities and socially oriented innovation. The proposed mediation model provides a structured explanation of how technological and managerial adaptation could connect with stakeholder value creation. Social innovation occupies a potentially important position because it links internal transformation with wider social needs. The simulated coefficients and organizational case demonstrate analytical possibilities rather than verified empirical relationships. Their interpretation must therefore remain conditional on future measurement validation, representative sampling, and rigorous assessment of alternative causal explanations.

The overall interpretation positions sustainable organizational resilience as a multidimensional outcome requiring technological adaptability, responsive leadership, and engagement with stakeholder needs. The proposed model offers a basis for examining strategic change beyond narrow measures of digital investment or operational efficiency. Its contribution lies in integrating distinct organizational capabilities within a testable framework while recognizing that mediation and causal effectiveness cannot be established through hypothetical results. Future empirical investigation should evaluate temporal relationships, organizational differences, and implementation mechanisms across sectors. Such evidence would determine whether social

innovation genuinely strengthens the relationship between strategic transformation and long-term organizational resilience.

The illustrative model suggests that digital transformation and agile leadership may reinforce sustainable organizational resilience partly through social innovation. The simulated paths from digital transformation and agile leadership to social innovation were 0.42 and 0.36, respectively, while social innovation was associated with resilience at 0.48. These coefficients describe a proposed pattern, not observed relationships or evidence of causal effects. The relative magnitudes require validation across organizational settings.

The constructed results also retained smaller direct paths from digital transformation and agile leadership to resilience, suggesting a possible combination of indirect and direct associations. Illustrative indirect coefficients of 0.202 and 0.173 describe pathways through social innovation. Their interpretation requires caution because multiplying standardized coefficients in a hypothetical model does not establish mediation in real organizations or rule out alternative causal sequences.

The descriptive illustration placed digital transformation above social innovation in average reported capability. This difference raises a useful question: organizations may digitize operations more readily than they develop solutions addressing stakeholder needs. Yet the numbers cannot demonstrate a capability gap without observed responses, measurement equivalence, and uncertainty estimates. Actual organizational differences may instead reflect sector composition, survey wording, or respondent expectations.

The hypothetical organizational case depicts a service provider combining digital coordination, cross-functional decisions, and stakeholder-oriented service redesign. Its analytical value lies in specifying a possible mechanism connecting internal modernization to external responsiveness. Because no organization was observed, however, the narrative cannot establish that these activities occur in the proposed order, endure through disruption, or produce measurable sustainable resilience. Practical outcomes must be examined before accepting this sequence.

Vial's review describes digital transformation as organizational responses to technological disruption that reshape value creation and encounter structural barriers. The present framework is consistent with that broader understanding, rather than equating transformation with software adoption. Its added emphasis concerns whether socially directed innovations translate technological changes into resilience. That proposition still requires empirical distinction from operational efficiency and ordinary organizational innovation.

Verhoef and colleagues distinguish digitization, digitalization, and digital transformation, emphasizing organizational capabilities and changing business models. This distinction challenges superficial interpretations of high digital transformation scores. An organization may automate records without redesigning its value proposition or stakeholder relationships. Accordingly, measurements in the proposed model must demonstrate substantive transformation rather than count technologies, applications, or investments alone.

Duchek conceptualizes resilience through anticipation, coping, and adaptation, portraying it as a capability that unfolds across stages. The present model aligns with this process orientation but risks compressing those stages into one survey score. Sustainable resilience also requires clarifying what persists, what changes, and whose interests are protected. A single broad latent construct may hide important differences between recovery and genuine renewal.

Zhang and colleagues examined digital transformation, innovation capability, agile response, and organizational resilience, providing a close comparison for the proposed pathways. Their work limits any claim that linking digitalization, agility, and resilience is inherently novel. A defensible contribution would instead establish how social innovation differs from general innovation

capability and why stakeholder value creation changes the explanatory model. Discriminant evidence is essential to that more specific contribution.

The proposed relationships signal that resilience should not be treated as a technological possession. Digital resources may expand information processing while leaving decision rights, trust, and organizational learning unchanged. The meaningful question is how employees and leaders convert technical possibilities into adaptive collective action. This framing makes resilience a relational organizational capacity rather than a simple outcome of acquiring digital infrastructure.

The mediating role assigned to social innovation further signals that stakeholder relationships may shape adaptation. Solutions developed with communities can reveal overlooked needs and new sources of cooperation during disruption. However, socially oriented projects may also consume scarce resources or privilege highly visible stakeholders. Their connection with resilience should be judged by durable outcomes and distributional consequences, not positive labels alone.

Agile leadership also merits critical reflection. Responsiveness, experimentation, and decentralized decisions may support timely adjustments, yet rapid iteration can displace consultation or weaken accountability. Calling a leadership style agile offers no assurance of its effectiveness. Evaluation should examine which decisions are delegated, how feedback changes practice, and whether short-term flexibility undermines long-term responsibilities to workers and external communities. Responsibility and learning must remain compatible over time.

The illustrative mediation pattern additionally warns against confusing statistical fit with theoretical confirmation. Closely related survey items can inflate apparent connections between innovation and resilience. Common respondents may evaluate their organizations favorably across every construct. A convincing argument would require discriminant measures, diverse informants, temporal separation, and consideration of competing models in which resilience itself facilitates innovation.

For managers, the proposed framework suggests assessing digital investment alongside organizational learning and social outcomes. Dashboards showing adoption rates or process speed provide incomplete guidance if employees cannot experiment or stakeholders experience exclusion. Strategic reviews should connect technology portfolios to concrete service improvements, documented feedback, and recovery capabilities. Decisions should be revised when benefits remain concentrated or operational vulnerabilities grow.

For leadership development, the implications concern practical behaviors rather than branding. Leaders can organize cross-functional problem solving, define decision boundaries, encourage constructive disagreement, and review failed experiments without punishing evidence-based learning. Such practices might facilitate adaptation, although their effectiveness will depend on resources and institutional authority. Training should therefore be evaluated against observed team actions and outcomes, not self-reported enthusiasm.

For researchers, the proposed mediation model requires careful construct separation and design choices. Social innovation should capture the creation and implementation of solutions addressing unmet social needs, whereas resilience should measure anticipation, continuity, and adaptation. Treating stakeholder satisfaction as an indicator of both constructs would obscure the mechanism. Independent outcome measures and organizational-level aggregation checks can strengthen inferential credibility.

For policymakers and funders, the framework suggests balancing digital infrastructure programs with support for participation and collaborative innovation. Technology subsidies alone may not build capacity to withstand disruption. Accountability measures should assess accessibility, equity, environmental consequences, and service continuity. These implications remain conditional:

evidence from particular sectors must precede broad prescriptions, especially where public-interest objectives conflict with short-term commercial priorities. Local constraints should inform implementation and evaluation decisions.

The hypothetical positive digital transformation pathway is plausible because integrated information systems can accelerate coordination and provide clearer operational signals. Faster access to data may help organizations detect problems early and redirect resources. These advantages disappear when data are unreliable, systems lack interoperability, or decision makers cannot act on insights. Technology therefore operates through organizational processes, not independently of them.

The agile leadership pathway is plausible because adaptive routines can shorten feedback cycles and facilitate recombination of resources. Leaders who support cross-functional experimentation may help employees convert information into new practices. Yet the same structures can create confusion when responsibilities remain unclear. The expected direction and magnitude of any association depend on governance, organizational culture, and whether experimentation receives adequate support.

Social innovation could connect these capabilities with resilience by strengthening stakeholder trust, generating locally relevant services, and diversifying problem-solving relationships. Such mechanisms may improve responsiveness during disruption and support longer-term adaptation. Their effects might instead be weak where projects remain symbolic, depend on unstable funding, or fail to reach vulnerable groups. Measured social outcomes are therefore necessary to distinguish substantive innovation from rhetoric.

Alternative explanations remain credible. Financially resilient organizations may already possess funds for technology, leadership development, and social initiatives, creating positive correlations without the proposed directional sequence. Industry regulation, organizational age, market position, and crisis exposure could also influence every construct. Time-lagged surveys reduce some immediate response biases but cannot eliminate reverse causality or unobserved confounding. These competing explanations deserve explicit tests in subsequent studies.

Future studies should implement the specified multiwave organizational survey with clearly reported sampling frames, recruitment rates, and independent informants. Researchers must justify the number of organizations through prospective power analysis and assess agreement before aggregating individual responses. Measurement validation should address item loadings, construct overlap, and differences across sectors. Preregistered hypotheses would also reduce selective reporting of attractive paths.

Stronger designs should examine temporal ordering through repeated organizational measures and, when feasible, natural experiments or credible quasi-experimental comparisons. Mediation estimates should include organizationally clustered uncertainty and sensitivity analysis for unmeasured confounding (Elkhwesky dkk., 2024). Researchers should compare the proposed model with alternatives that reverse innovation and resilience or represent them as mutually reinforcing. Such comparisons would clarify explanatory boundaries without promising causal certainty.

Qualitative cases could complement structural models by tracing decisions, collaboration, and stakeholder experiences during actual disruptions. Observations and documents could reveal whether digital tools changed leadership routines and whether social initiatives altered service continuity (Li dkk., 2024). Contrasting successful and unsuccessful cases would be especially informative. Interviews should include employees and affected stakeholders, not only senior managers who may favor positive institutional narratives.

The practical next step is a transparent evaluation program linking digital maturity, leadership behavior, social innovation outcomes, and resilience across time (Sharma dkk., 2024). Decision makers need evidence of both organizational continuity and social consequences before declaring transformation successful. The proposed framework offers testable relationships rather than verified results. Its contribution will depend on replicable measures, credible comparisons, and clear reporting of null or contradictory findings. Transparent negative findings would be valuable for theory.

CONCLUSION

The proposed analytical framework suggests that digital transformation and agile leadership may relate to sustainable organizational resilience through social innovation, beyond operational modernization. In the illustrative model, digital transformation and agile leadership showed positive associations with social innovation, which was associated with resilience. Smaller direct paths suggested a potential combination of mediated and unmediated relationships. These patterns emphasize a distinction between acquiring digital capabilities and using them to address stakeholder needs. Organizational resilience, in this interpretation, involves more than maintaining operations during disruption; it also encompasses learning, adaptation, and responsible renewal. The numerical coefficients reported earlier were simulated, however, and cannot establish empirical relationships or causal effects. The principal conclusion is therefore a theoretically plausible proposition requiring validation, not a demonstrated improvement in organizational performance.

The study's contribution is conceptual and methodological. Conceptually, it positions social innovation as a potential mechanism connecting internal technological and leadership capabilities with externally meaningful adaptation. This perspective expands resilience analysis beyond digital maturity, managerial flexibility, and short-term continuity by foregrounding social value and stakeholder relationships. Methodologically, the proposed organizational-level, time-lagged survey and structural equation model offer a testable approach for separating direct associations from indirect pathways. Multiple informants, construct validation, organizational clustering, and comparisons with alternative models are intended to reduce interpretive ambiguity. The contribution does not rest on inventing new constructs or assuming that mediation is novel. Its value depends on demonstrating that social innovation can be distinguished from general innovation capability and organizational resilience, theoretically and empirically. Such differentiation may generate explanations of strategic change across organizational contexts.

The proposed research remains limited by the absence of collected survey data, validated measures, and observed organizational outcomes. Descriptive statistics, structural coefficients, significance levels, and the organizational case presented previously were illustrative; none supports claims of confirmed effectiveness. A time-lagged observational design, when implemented, would remain vulnerable to unobserved confounding, selection effects, measurement overlap, and reverse causality. Sector differences, organizational size, institutional conditions, and stakeholder perspectives may further alter the proposed pathways. Future research should recruit a defined organizational sample, justify statistical power, validate multidimensional measures, and document aggregation across respondents. Longitudinal and quasi-experimental studies could examine temporal ordering rigorously, while qualitative case studies could reveal how social initiatives influence responses to actual disruptions. Comparative analysis should test competing explanations and assess social outcomes and operational resilience. Evidence from these investigations would establish whether the framework offers a replicable contribution to sustainable strategic management.

DECLARATION OF AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this manuscript, the author(s) used Grammarly to assist in improving grammar, language quality, and overall readability of the text. After using this tool, the author(s) carefully reviewed and edited the content as necessary and take full responsibility for the content of the publication

AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; In-vestigation.

DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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