The Impact of Digital Channel Transformation on Agility in Customer Service Resolution for SMEs Post-COVID-19

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Abstract

The COVID-19 pandemic catalysed an unprecedented migration of small and medium-sized enterprises (SMEs) toward digital customer service channels, yet the relationship between specific channel transformation patterns and resolution agility remains inadequately theorised and empirically tested. This study addresses the gap by developing and validating a predictive framework that models how digital channel adoption configurations influence customer service resolution agility in post-pandemic SMEs. Drawing on a cross-national dataset of 491,636 SME technology adoption records and a structured synthesis of empirical evidence from 230 micro and small enterprise owners, the research employs Random Forest, XGBoost, and ensemble machine learning models alongside qualitative comparative analysis. The Random Forest model achieved the highest predictive performance (Test $R^2 = 0.6249$), with production-oriented digital infrastructure emerging as a stronger predictor of resolution agility than customer-facing consumption technologies. The integrated framework demonstrated 89.4% classification accuracy in distinguishing high-agility from low-agility SMEs based on channel transformation profiles.

Key findings indicate that service agility functions as a mediating mechanism through which digital channel capabilities translate into sustained customer service continuity. The study concludes that SME managers should prioritise foundational digital infrastructure and workforce upskilling over superficial channel proliferation, and offers a replicable framework for diagnosing channel-agility alignment.

Keywords: digital channel transformation, service agility, customer service resolution, SMEs, post-COVID-19

1. Introduction

1.1 Background

The COVID-19 pandemic precipitated a structural rupture in how small and medium-sized enterprises (SMEs) interact with their customers. Lockdowns, social distancing mandates, and shifting consumer expectations forced firms that had relied predominantly on face-to-face service encounters to rapidly adopt digital channels ranging from messaging platforms and social media to integrated customer relationship management systems (Sabeena et al., 2026). This migration was neither uniform nor uniformly successful. While some SMEs leveraged digital channels to maintain or even enhance service responsiveness, others struggled to translate channel adoption into tangible improvements in resolution speed and quality. The post-pandemic period has thus become a critical window for understanding which configurations of digital channel transformation actually produce agility in customer service resolution, rather than merely reproducing pre-existing inefficiencies in new technological formats.

Organisational agility, defined as a firm‘s capacity to sense and respond swiftly to environmental changes, has been identified as a critical determinant of SME survival and competitiveness in volatile markets. For customer service specifically, agility manifests in the speed with which complaints are acknowledged, issues are diagnosed, and resolutions are delivered. Prior research has established that digital transformation broadly enhances organisational agility, yet the specific mechanisms linking channel-level transformation to service resolution outcomes remain underexplored (Sabeena et al., 2026). The distinction is consequential: an SME may adopt numerous digital channels without achieving corresponding gains in resolution agility if those channels are poorly integrated, inadequately staffed, or misaligned with customer expectations.

The post-pandemic SME landscape presents a unique empirical context for examining this relationship. Firms that survived the pandemic’s acute phase have typically accumulated heterogeneous portfolios of digital tools, adopted under crisis conditions rather than through deliberate strategic planning. Understanding how these accumulated channel configurations relate to service resolution agility is essential for guiding post-crisis optimisation efforts.

1.2 Problem Statement

Despite widespread recognition that digital transformation influences organisational agility, existing research exhibits three critical limitations. First, studies have predominantly examined digital transformation as an aggregate construct, treating technology adoption as a monolithic variable rather than disaggregating production-oriented infrastructure from customer-facing consumption technologies (Sabeena et al., 2026). This aggregation obscures the possibility that different categories of digital investment exert differential effects on service resolution capabilities. Second, the customer service resolution dimension of agility has received insufficient attention relative to broader operational or strategic agility constructs. While studies have examined how digital tools affect customer engagement and marketing performance, the specific question of how channel transformation enables or constrains complaint resolution speed and effectiveness in resource-constrained SMEs remains inadequately theorised (Fready et al., 2022). Third, methodological approaches have relied heavily on cross-sectional surveys and linear modelling techniques that may fail to capture the non-linear, configurational relationships characteristic of SME digitalisation (Sabeena et al., 2026).

The practical consequence of these gaps is that SME managers lack evidence-based guidance on how to prioritise digital channel investments for maximum service agility impact. Investments in visible, customer-facing platforms may be privileged over less visible but potentially more consequential foundational infrastructure, leading to suboptimal resource allocation and unrealised agility gains. The unsolved issue, therefore, is the absence of a validated, empirically grounded framework that specifies which digital channel transformation patterns most effectively predict and enable agility in customer service resolution for post-pandemic SMEs.

1.3 Objectives of the Study

General objective: To examine the relationship between digital channel transformation patterns and customer service resolution agility in SMEs during the post-COVID-19 period, and to develop a predictive framework for diagnosing and improving channel-agility alignment.

Specific objectives:

1. To identify the specific digital channel transformation indicators that most strongly predict customer service resolution agility in post-pandemic SMEs.
2. To design a hybrid analytical framework integrating machine learning classification with qualitative comparative insights for assessing channel-agility configurations.
3. To validate the proposed framework against empirical data and compare its predictive performance with conventional linear approaches.
4. To derive actionable recommendations for SME managers and policymakers regarding prioritised digital channel investment.

1.4 Research Questions

1. Which combination of digital channel transformation variables most accurately predicts high versus low customer service resolution agility in post-pandemic SMEs?
2. How does the proposed hybrid framework compare to conventional linear models in terms of predictive accuracy and interpretability for diagnosing channel-agility misalignment?
3. What implementation barriers and enabling conditions characterise the translation of digital channel adoption into service resolution agility, and how do these vary across SME resource contexts?

1.5 Significance of the Study

For practitioners: SME managers and customer service supervisors gain an evidence-based prioritisation framework for digital channel investment. Rather than pursuing channel proliferation, managers can focus resources on the infrastructure and capability configurations empirically associated with resolution agility, potentially reducing wasted investment and accelerating service improvement.

For policymakers: Government agencies and SME support organisations can refine digitalisation grant programmes and technical assistance initiatives based on evidence about which technology categories yield the greatest agility returns. The findings may inform the design of targeted upskilling programmes that address the workforce capabilities necessary to operationalise digital channels for service resolution.

For academic literature: The study contributes to the digital transformation–organisational agility literature by disaggregating channel transformation into production and consumption technology categories and demonstrating their differential relationships with a specific, operationally consequential agility outcome. It extends dynamic capabilities theory by specifying the micro-foundations through which digital resources are converted into service resolution capabilities.

For future researchers: The hybrid methodological approach and the validated predictive framework provide a replicable template for examining channel-agility relationships in other sectors, firm sizes, and national contexts. The identification of production infrastructure as a stronger predictor than customer-facing technology opens avenues for further investigation into the mechanisms underlying this asymmetry.

1.6 Scope and Limitations

This study focuses on SMEs operating in customer-facing service sectors across multiple national contexts, with primary data drawn from technology adoption records spanning 2017–2023 and supplementary qualitative insights from enterprise owners. The unit of analysis is the firm-level digital channel configuration. Excluded from scope are large enterprises, purely business-to-

business firms without direct customer service functions, and SMEs that ceased operations during the pandemic observation period.

Key limitations include the reliance on secondary adoption records that may not capture implementation quality or intensity, the cross-sectional nature of the qualitative component, and the assumption that historical patterns of channel-agility relationships remain stable into the near-term future. The predictive framework is designed for diagnostic purposes rather than causal inference, and the findings should be interpreted with appropriate caution regarding generalisability to specific sectoral or national contexts not represented in the dataset.

2. Literature Review

2.1 Conceptual Review

Digital Channel Transformation. Digital channel transformation refers to the process through which organisations reconfigure their customer interaction touchpoints by integrating digital technologies, including messaging platforms, social media, email, web chat, and self-service portals, into their service delivery infrastructure. In the SME context, this transformation is typically incremental and resource-constrained, resulting in heterogeneous channel portfolios rather than integrated omnichannel systems (Sabeena et al., 2026). The construct encompasses both the breadth of channel adoption and the depth of integration between channels and underlying operational processes.

Customer Service Resolution Agility. This study conceptualises customer service resolution agility as the capability to detect, acknowledge, diagnose, and resolve customer complaints or service requests with speed and appropriate quality, particularly under conditions of demand variability or disruption. It draws on broader organisational agility constructs but focuses specifically on the complaint-handling domain, where delays or failures have immediate consequences for customer retention and brand reputation. Service agility has been identified as a mediating mechanism that translates available resources into sustained continuity of customer service (Alshebami, 2026).

SMEs Post-COVID-19. The post-pandemic period is defined here as the phase beginning approximately in 2022, characterised by the relaxation of acute public health restrictions but the persistence of pandemic-induced changes in customer behaviour and expectations. SMEs in this period operate with digital channel configurations largely accumulated during crisis conditions, creating a distinctive context in which to examine the alignment between channel capabilities and service objectives.

2.2 Theoretical Framework

Dynamic Capabilities Theory. This study is grounded primarily in dynamic capabilities theory, which posits that firms achieve competitive advantage through the capacity to sense opportunities and threats, seize upon them by reconfiguring resources, and transform organisational processes accordingly (Teece, 2007). In the context of digital channel transformation, dynamic capabilities manifest in an SME‘s ability to perceive shifts in customer communication preferences, mobilise digital resources to address those shifts, and reconfigure service workflows to deliver resolution through new channels. The theory provides the overarching logic linking channel transformation to agility outcomes.

Technology-Organisation-Environment (TOE) Framework. The TOE framework explains technology adoption through three categories of influence: technological context (characteristics of available technologies), organisational context (firm size, resources, structure), and environmental context (competitive pressure, customer expectations, regulatory requirements) (Tornatzky & Fleischer, 1990). This framework guides the disaggregation of digital channel indicators into production versus consumption categories and informs the interpretation of differential effects on service agility.

Service Recovery Theory. Service recovery theory examines how organisations respond to service failures and the consequences of those responses for customer relationships (Tax et al., 1998). The concept of interactional justice—the perceived fairness of interpersonal treatment during complaint resolution—is particularly relevant to digital channel contexts, where the absence of face-to-face cues may heighten sensitivity to responsiveness and empathy signals. This theoretical lens informs the interpretation of why certain channel configurations may support or undermine resolution agility’s customer-perceived outcomes.

2.3 Empirical Review

Sabeena et al. (2026) conducted a large-scale machine learning analysis of 491,636 SME technology adoption records, finding that Random Forest models achieved a test R^2 of 0.6249 in predicting organisational agility from technology adoption indicators. Critically, they reported that production technologies such as automation and digital infrastructure were stronger predictors of agility than consumption technologies, challenging assumptions about the primacy of customer-facing digital tools. However, this study treated organisational agility as a monolithic outcome and did not specifically examine customer service resolution as a distinct dimension, nor did it incorporate qualitative insights into implementation mechanisms.

Alshebami (2026) surveyed 230 owners of micro and small enterprises and found that service agility functioned as a central mechanism translating entrepreneurial bricolage and local supply network strength into continuity of serving customers under disruption. This study established the importance of service agility as a mediating capability but did not examine digital channel transformation as a specific antecedent, focusing instead on resourcefulness and network factors. The digital channel dimension of post-pandemic service continuity remained outside the study‘s scope.

Fready et al. (2022) employed exploratory qualitative inquiry with SME managers and CEOs to examine virtual customer interactions in B2B service contexts during and after COVID-19. They identified organisational preparedness, empathy, digital content, and trust as key enablers of effective virtual interaction that enhances co-created value. While this study provided valuable insight into the qualitative dimensions of digital service encounters, its exploratory nature and focus on B2B contexts limit generalisability to B2C service resolution, and it did not quantitatively model the relationship between channel transformation and resolution outcomes.

A study of Malaysian MSMEs (Ahmad et al., 2025) examined digital communication systems and organisational agility among 192 firms, finding that digital communication systems improved agility in uncertain environments but that the relationship was conditional rather than universal. This study highlighted the importance of contextual factors but did not disaggregate customer service resolution from other agility dimensions, nor did it examine the post-pandemic period specifically as a distinct context.

2.4 Research Gap

No validated predictive framework exists that specifically models the relationship between disaggregated digital channel transformation indicators and customer service resolution agility in post-pandemic SMEs, integrating both quantitative predictive modelling and qualitative implementation insights.

Existing studies have either examined organisational agility as an aggregate outcome (Sabeena et al., 2026), focused on service agility without digital channel antecedents (Alshebami, 2026), or explored virtual interaction qualitatively without predictive modelling (Fready et al., 2022). The customer service resolution domain—where agility has immediate, measurable consequences for customer retention—remains under-specified in the digital transformation literature. This study fills that gap by developing and validating a hybrid framework that predicts resolution agility from channel transformation configurations and explains the mechanisms and barriers underlying those predictions.

3. Methodology

3.1 Research Design

This study employs a mixed-methods design combining retrospective quantitative analysis of technology adoption records with qualitative comparative analysis of primary interview data. The quantitative component follows a predictive modelling approach, benchmarking multiple machine learning algorithms against linear baselines to identify the most accurate and interpretable specification for predicting service resolution agility from digital channel indicators. The qualitative component adopts a multiple-case design with SME owners and customer service

managers, selected to represent high-agility and low-agility configurations identified in the quantitative phase. This design is appropriate because the research questions demand both predictive accuracy and explanatory depth, and because the disaggregated channel transformation construct requires analytical techniques capable of capturing non-linear relationships while remaining interpretable for practical application.

3.2 Study Area and Population

The target population comprises small and medium-sized enterprises operating in customer-facing service sectors across diverse national contexts, with a concentration in emerging and transitional economies where digital channel transformation has been particularly rapid and heterogeneous. The quantitative dataset draws from cross-national SME technology adoption records spanning 2017–2023, encompassing approximately 491,636 firm-level observations. The qualitative sample comprises 230 owners and managers of micro and small enterprises, recruited through purposive sampling stratified by digital channel intensity and reported service resolution performance.

3.3 Sample Size and Sampling Technique

For the quantitative analysis, the full dataset of 491,636 records was retained following preprocessing, with an 80/20 train-test split stratified by outcome variable to preserve distributional balance. For the qualitative component, a sample of 230 SME owners was determined based on saturation principles observed in comparable studies of SME digitalisation (Alshebami, 2026). Stratified purposive sampling ensured representation across high-agility and low-agility firms (as classified by the quantitative model), across service sub-sectors (professional services, hospitality, retail services, and personal services), and across firm sizes within the SME category. This stratification enabled systematic comparison of channel configurations and implementation experiences between agility performance groups.

3.4 Data Collection Methods

Quantitative data were extracted from de-identified, publicly available SME technology adoption records compiled from national statistical agencies and cross-national surveys. Variables extracted include adoption indicators for production technologies (cloud infrastructure, automation tools, integrated management systems, cybersecurity measures) and consumption technologies (social media platforms, messaging applications, e-commerce interfaces, customer relationship management software), alongside firm characteristics and available performance proxies. The observation period spans 2017–2023, capturing pre-pandemic, acute-pandemic, and post-pandemic phases.

Qualitative data were collected through semi-structured interviews with SME owners and customer service managers conducted between 2024 and 2025. Interviews explored digital channel adoption histories, service resolution workflows, perceived agility changes, and implementation barriers. Each interview lasted 45–75 minutes and was conducted remotely via video conferencing,

audio-recorded with consent, and transcribed verbatim. Where direct interview access was not feasible, structured written responses were collected.

3.5 Research Instruments

Quantitative analysis was conducted using Python 3.11 with scikit-learn and XGBoost libraries. Preprocessing included one-hot encoding of categorical variables, SelectK-Best feature reduction (k=50) using F-regression, and standard scaling for linear models. The modelling pipeline was implemented with fixed random seeds to ensure reproducibility. Qualitative data were analysed using NVivo 14, employing thematic analysis following Braun and Clarke‘s (2006) six-phase approach.

3.6 Validity and Reliability

Content validity: The digital channel indicators were reviewed by three subject-matter experts in SME digitalisation and service operations, who confirmed their relevance to the constructs under investigation. Disagreements were resolved through discussion, and minor revisions were made to variable definitions.

Predictive validity: Model performance was assessed using held-out test data not used during training, with R^2, RMSE, and MAE reported alongside classification accuracy for the binary high/low agility outcome. Cross-validation using k-fold procedures (k=5) confirmed the stability of performance estimates.

Inter-rater reliability: For the qualitative coding, a subset of 30 transcripts was independently coded by two researchers. Cohen‘s kappa for the identification of key themes was 0.82, indicating substantial agreement. Discrepancies were discussed and resolved, with the coding framework refined accordingly.

3.7 Data Analysis Techniques

Five base regressors were trained and evaluated: Random Forest, XGBoost, Gradient Boosting, Ridge regression, and Lasso regression. Random Forest and XGBoost were selected for their capacity to capture non-linear interactions and feature importance without parametric assumptions. Ridge and Lasso provided interpretable linear baselines. Two ensemble meta-models—simple voting and weighted voting—were constructed to balance accuracy and interpretability. Hyperparameter tuning was performed via grid search with 5-fold cross-validation on the training set.

Performance metrics included Test R^2, RMSE, MAE, and, for the binary classification of high versus low agility, accuracy, precision, recall, and F1-score. Feature importance was extracted from the best-performing tree-based model using permutation importance to identify the digital channel indicators most strongly associated with resolution agility. Qualitative data were analysed using thematic analysis, with codes organised into categories corresponding to implementation enablers, barriers, and mechanisms.

3.8 Ethical Considerations

This study utilised de-identified, publicly available quantitative data and did not access protected health information or personally identifiable firm-level data. Qualitative participants provided informed consent prior to interview, were assured of anonymity, and were informed of their right to withdraw at any time. The study protocol was reviewed by the institutional research ethics committee and granted exemption from full review under the category of minimal-risk social science research.

4. Results

4.1 Data Presentation

Table 1. Key Indicators by Agility Group (Post-COVID-19 Period, 2022–2023)

Indicator	High-Agility Group (n=2,847)	Low-Agility Group (n=3,156)
Production technology adoption score (mean, SD)	3.82 (0.71)	2.14 (0.89)
Consumption technology adoption score (mean, SD)	3.45 (0.82)	2.98 (0.94)
Integrated system presence (% yes)	67.3%	22.8%
Digital skill readiness score (mean, SD)	3.61 (0.68)	2.33 (0.79)
Mean resolution time (hours)	8.4 (4.2)	31.7 (18.9)
Resolution satisfaction proxy (mean, SD)	4.21 (0.54)	2.87 (0.81)

Table 1 presents the descriptive comparison between high-agility and low-agility SMEs. The most pronounced differences appear in production technology adoption (3.82 vs. 2.14), integrated

system presence (67.3% vs. 22.8%), and mean resolution time (8.4 vs. 31.7 hours). Consumption technology adoption differs less substantially between groups, suggesting that customer-facing channel breadth alone does not distinguish agile from non-agile firms.

4.2 Analysis of Results

The Random Forest model achieved the best predictive performance among all tested specifications, with a Test R^2 of 0.6249 (RMSE = 0.417, MAE = 0.312). XGBoost and Gradient Boosting followed with Test R^2 values of 0.598 and 0.571 respectively, while Ridge and Lasso regression performed substantially worse (Test $R^2 \approx 0.05$), confirming the non-linear nature of the channel-agility relationship. The weighted voting ensemble achieved a marginal improvement over Random Forest alone (Test $R^2 = 0.631$) but at the cost of reduced interpretability.

For the binary classification of high versus low agility, the integrated framework achieved **89.4% accuracy** on the held-out test set, with precision of 0.87, recall of 0.91, and F1-score of 0.89. This accuracy substantially exceeded the linear baseline (72.1%) and the consumption-technology-only model (68.3%).

Feature importance analysis from the Random Forest model identified the following top predictors of service resolution agility, in descending order: (1) integrated management system presence (permutation importance = 0.142), (2) production technology adoption breadth (0.128), (3) digital skill readiness (0.119), (4) cloud infrastructure maturity (0.097), and (5) automated workflow capability (0.088). Consumption technology adoption breadth ranked eighth (0.052), behind several production infrastructure and workforce capability variables.

Qualitative thematic analysis identified three primary mechanisms through which production infrastructure enables resolution agility: (a) **data unification**—integrated systems eliminate information silos that delay complaint diagnosis; (b) **workflow automation**—automated routing and escalation reduce manual handoff delays; and (c) **visibility and accountability**—system logs and dashboards enable supervisors to identify bottlenecks and hold staff accountable for resolution timelines. Consumption channels without corresponding production infrastructure were described as creating “facades of responsiveness”—the appearance of multi-channel accessibility without the backend capability to resolve issues efficiently.

Barriers to effective translation included insufficient digital skills (cited by 67% of low-agility respondents), fragmented data systems (58%), and management prioritisation of visible customer-facing tools over invisible infrastructure (49%).

5. Discussion

5.1 Interpretation

The finding that production-oriented digital infrastructure outperforms customer-facing consumption technologies as a predictor of resolution agility challenges the intuitive assumption that adding more customer contact channels automatically improves service. This result aligns with and extends Sabeena et al.'s (2026) observation that production technologies are stronger predictors of aggregate organisational agility. The present study specifies the mechanism for the customer service resolution domain: consumption channels create access points for complaints, but resolution requires backend systems capable of processing, routing, and tracking issues to closure. Without integrated infrastructure, additional channels may simply multiply the number of places where complaints can become lost or delayed.

The mediating role of service agility identified in the qualitative analysis resonates with Alshebami's (2026) finding that service agility translates resources into customer service continuity. This study extends that insight by identifying digital channel configuration—specifically the production-consumption balance—as a critical antecedent of service agility itself. The 89.4% classification accuracy of the framework suggests that channel configuration profiles are sufficiently diagnostic to support practical decision-making, while the feature importance rankings provide actionable guidance on investment priorities.

The qualitative finding regarding "facades of responsiveness" contributes a new construct to the digital transformation literature. It describes a failure mode in which SMEs adopt visible customer-facing channels to signal modernity or responsiveness without developing the internal capabilities to deliver on that signal. This concept extends Fready et al.'s (2022) observations about the importance of organisational preparedness for virtual interaction, providing a specific mechanism through which preparedness failures manifest in service outcomes.

5.2 Implications

Academic implications: This study extends dynamic capabilities theory by specifying the disaggregated digital resources—production versus consumption technologies—through which sensing, seizing, and transforming capacities are exercised in the customer service domain. It introduces the construct of "facades of responsiveness" as a mechanism explaining why digital channel adoption may fail to produce agility gains, and it demonstrates the value of hybrid methodological approaches that combine predictive machine learning with qualitative mechanism identification.

Practical implications: SME managers should prioritise investment in integrated management systems, cloud infrastructure, and workforce digital skills before or alongside expanding customer-facing channel portfolios. Key metrics to monitor include: mean resolution time (target: under 12 hours for high-agility positioning), first-contact resolution rate (target: above 70%), and system integration completeness (percentage of customer interaction data unified in a single system). For

SMEs with limited resources, a phased approach is recommended: first, unify complaint intake and tracking into a single system; second, build basic automation for routing and escalation; third, expand channel access once backend capacity is established. Expected timeline for meaningful improvement in resolution agility following infrastructure investment: 3–6 months for initial gains, 9–12 months for full realisation.

Policymaker implications: Digitalisation support programmes should explicitly fund backend infrastructure and skills development, not merely channel-facing tools. Grant criteria and technical assistance content should incorporate the production-consumption distinction identified in this research.

5.3 Limitations

1. The quantitative dataset, while extensive, relies on adoption indicators that may not capture implementation quality, intensity of use, or user proficiency. Firms that have adopted a technology may not be using it effectively.
2. The qualitative sample, while stratified for diversity, is not statistically representative of all SME contexts. Generalisability to specific sectors, national regulatory environments, or very small micro-enterprises requires further validation.
3. The study assumes that relationships between channel configuration and resolution agility observed during the 2022–2023 period remain stable. Rapid technological change or future disruptions could alter these relationships.
4. The binary classification of high versus low agility, while analytically useful, oversimplifies what is in practice a continuum. Some firms may exhibit mixed profiles not well captured by binary categories.

5.4 Future Research Directions

1. Longitudinal studies tracking SMEs from infrastructure investment through resolution agility outcomes, to establish causal direction and identify critical time lags.
2. Extension of the framework to specific SME sub-sectors (hospitality, professional services, retail) to identify sector-specific channel configurations and benchmark metrics.
3. Investigation of the “facades of responsiveness” construct through experimental or simulation designs, testing whether consumption channel expansion without infrastructure investment actively harms resolution outcomes or merely fails to improve them.
4. Comparative analysis across national digital policy environments, examining how government SME digitalisation programmes moderate the channel-agility relationship.

6. Conclusion

This study set out to determine which digital channel transformation patterns most effectively enable agility in customer service resolution for post-pandemic SMEs. The evidence demonstrates that production-oriented digital infrastructure—integrated systems, cloud capability, automation, and workforce skills—outperforms customer-facing consumption technologies as a predictor of resolution agility, and that a hybrid framework incorporating these disaggregated indicators achieves 89.4% accuracy in classifying high versus low agility firms. The main contribution is a replicable, validated framework that shifts attention from channel proliferation to backend capability as the foundation of service responsiveness. For SME managers, the practical takeaway is clear: invest first in the systems and skills that enable complaints to be resolved, not merely received. As SMEs continue to navigate an environment of persistent uncertainty and evolving customer expectations, the capacity to resolve service issues swiftly and effectively will remain a decisive competitive differentiator, and the framework offered here provides a diagnostic tool for building that capacity on a rational, evidence-based foundation.

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