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# Financial and Operational Due Diligence in Management Consulting: A Framework for Assessing Business Resilience

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## Abstract

Due diligence has traditionally been organised into separate financial, commercial, operational and legal workstreams, each producing its own findings for an investor, lender or board. The disruptions of 2020 and 2021, including the COVID-19 pandemic, the global semiconductor shortage and the Suez Canal blockage, exposed the limits of this siloed approach: firms with sound balance sheets failed to deliver because a single supplier, a brittle process or a weak control environment amplified an external shock. This paper develops the Integrated Resilience Due Diligence Framework (IRDDF), a structured method that management consultants can use to assess business resilience during transactions, restructurings and strategic reviews. The framework integrates four pillars: financial resilience, measured through liquidity, leverage, coverage, cash conversion, distress scores and cash runway; supplier concentration, measured through a concentration index of purchasing spend, top-supplier dependence, single-sourcing, geographic exposure and buffer inventory; process performance, measured through overall equipment effectiveness, on-time-in-full delivery, the cash conversion cycle, first-pass yield and the ratio of time-to-recover to time-to-survive; and governance quality, assessed through a calibrated rubric covering board independence, audit oversight, enterprise risk management maturity, related-party exposure, internal controls and key-person dependence. Indicators are normalised to a common 0 to 100 scale and aggregated into a weighted Business Resilience Index, with gating rules that prevent strength in one pillar from masking critical weakness in another. A stress-testing module translates operational vulnerabilities into financial consequences. An illustrative application to a mid-sized manufacturer shows how the integrated view reverses the conclusion that a financial-only review would reach. The paper contributes a replicable, evidence-based tool for practitioners and sets out propositions for empirical validation.

**Keywords:** due diligence; management consulting; business resilience; financial ratio analysis; supplier concentration; operational performance; corporate governance; risk assessment

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## Introduction

Due diligence is one of the most consequential services that management consultants provide. Before an acquisition closes, a loan is extended, a turnaround plan is approved or a strategic partnership is signed, decision makers rely on diligence findings to judge whether a business can deliver the performance on which the transaction depends. Conventional practice divides this work into distinct streams. Financial due diligence examines the quality of earnings, net debt, working capital and the reliability of forecasts. Operational

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due diligence reviews manufacturing, supply chain, information technology and organisational capability. Legal and governance reviews examine contracts, compliance and control structures (Howson, 2003; Bruner, 2004). Each stream typically produces its own report, and integration is often left to the reader.

The events of 2020 and 2021 tested this model severely. The COVID-19 pandemic closed factories and borders, the semiconductor shortage idled automotive assembly lines across several continents, and the six-day obstruction of the Suez Canal in March 2021 delayed a significant share of global container trade. Firms that appeared healthy on financial metrics were exposed by concentrated supplier bases, thin inventory buffers and slow recovery processes (Ivanov, 2020; Ivanov & Dolgui, 2020). Conversely, some firms with moderate leverage proved durable because their operations and governance allowed rapid adaptation. The lesson for practitioners is that resilience is a property of the whole system, and that diligence which examines financial and operational dimensions separately can miss the interactions that determine whether a business survives a shock.

This paper addresses the following research question: *How can management consultants integrate financial, supply-side, process and governance evidence into a single, structured assessment of business resilience during due diligence?* In answering it, the paper makes three contributions. First, it synthesises the literatures on financial distress prediction, supply chain resilience, operations management and corporate governance into a coherent conceptual basis for resilience-oriented diligence. Second, it proposes the Integrated Resilience Due Diligence Framework (IRDDF), which specifies indicators, thresholds, a normalisation method, aggregation weights, gating rules and a stress-testing module. Third, it demonstrates the framework through an illustrative application and derives testable propositions for future empirical research.

The remainder of the paper is organised as follows. Section 2 describes the methodology. Section 3 presents the literature synthesis. Section 4 develops the conceptual model and propositions. Section 5 sets out the framework and its implementation protocol, and Section 6 reports an illustrative application. Section 7 discusses the findings, Section 8 draws out theoretical and practical implications, Section 9 states the limitations, Section 10 outlines directions for future research, and Section 11 concludes.

## Methodology

### Research Design

The study adopts a conceptual, design-oriented research approach. Rather than testing hypotheses on a sample of firms, it develops an assessment framework whose components are derived from established theory and evidence, and demonstrates its operation through an illustrative case. This approach suits a setting in which practice has advanced ahead of codified knowledge and in which the immediate aim is to specify a transparent model that can later be tested. The design follows accepted guidance for constructing composite indicators, which calls for a clear theoretical framework, defensible indicator selection, explicit normalisation and weighting, and sensitivity analysis (OECD & Joint Research Centre, 2008). The propositions in Section 4 link the framework to subsequent empirical work.

### Literature Search, Synthesis and Indicator Selection

Relevant literature was identified through structured searches of peer-reviewed journals in finance and accounting, operations and supply chain management, corporate governance and organisation studies, supplemented by applied studies from emerging markets. Search terms combined due diligence, financial distress, liquidity, supply chain resilience, supplier concentration, operational performance, internal control and enterprise risk management. Sources were retained when they proposed or tested a measure of financial, supply, process or governance condition; examined how such conditions affect performance under adverse events; or offered a framework applicable within diligence. Candidate indicators were then screened against four criteria: relevance to absorptive capacity, exposure, recovery capability or decision capability; availability within a typical diligence data room; measurability within an engagement of four to eight weeks; and low redundancy with other indicators in the same pillar. Indicators that failed two or more criteria were excluded, leaving the six financial, five supplier, five process and six governance indicators reported in Section 5.

### Calibration of Thresholds and Weights

Weak and strong thresholds for each quantitative indicator were set from conventional zones in the distress literature (Altman, 1968; Altman et al., 2017), concentration conventions from competition analysis (Rhoades, 1993), common lender covenant levels, and benchmark ranges reported in operations research (Muchiri & Pintelon, 2008; Simchi-Levi et al., 2014). Governance dimensions were operationalised as behaviourally anchored rubrics informed by governance codes and risk management frameworks (OECD, 2015; COSO, 2017). Pillar weights were assigned by reasoning about each pillar's position in the resilience chain and





can be recalibrated through structured expert elicitation (Saaty, 1980). Non-compensatory gating rules were added to reflect the weakest-link logic of Proposition 4 (Section 4).

### Illustrative Case

The framework is demonstrated through a stylised case constructed from patterns commonly observed in mid-market industrial transactions. The case does not describe a specific company; its inputs were chosen to be internally consistent and representative so that every step of scoring, gating and stress testing can be traced. All scores and scenario results were computed in a spreadsheet model and cross-checked by independent recalculation.

## Literature Synthesis

### Due Diligence in Management Consulting Practice

Due diligence is the systematic investigation of a target business to verify information, identify risks and inform valuation and deal structure (Howson, 2003). In mergers and acquisitions it has been linked to post-deal performance, since many value-destroying transactions can be traced to risks that were either missed or underweighted during diligence (Bruner, 2004). Consulting firms have extended the practice beyond transactions into vendor due diligence, lender reviews, turnaround assessments and supplier qualification. Despite this breadth, practitioner methods remain largely proprietary and are rarely described in the academic literature in a form that can be replicated or tested. Where integration does occur, it tends to rely on the judgement of an engagement lead rather than on an explicit model connecting findings across workstreams.

Evidence on acquisition outcomes is sobering: meta-analytic research finds that acquiring firms do not, on average, outperform after deals, pointing to unidentified moderators such as the quality of pre-deal assessment (King, Dalton, Daily, & Covin, 2004). Haspeslagh and Jemison (1991) emphasised that value is created or destroyed during integration, which diligence must anticipate, and Puranam, Powell and Singh (2006) framed diligence failure as a signal detection problem in which acquirers either miss genuine problems or overreact to false alarms. Wangerin (2019) linked the intensity of due diligence to post-acquisition performance and to the quality of acquisition accounting. Private equity research shows that investors explicitly underwrite operational and governance improvement (Kaplan & Strömberg, 2009; Gompers, Kaplan, & Mukharlyamov, 2016), that a substantial share of buyout value creation comes from these levers (Acharya, Gottschalg, Hahn, & Kehoe, 2013), and that ownership changes can measurably improve operating practices (Bernstein & Sheen, 2016). The consulting literature itself acknowledges a persistent gap between practice and systematic evidence about impact (Sturdy, 2011; Kipping & Clark, 2012).

Research on cross-border transactions in emerging markets shows that regulatory clearance and post-merger compliance integration are themselves sources of deal risk that diligence must anticipate (Ominyi, 2020; Ominyi & Anichukwueze, 2020), and that finance leadership plays a central role in aligning the strategic and financial objectives of partners in joint ventures and cross-border arrangements (Isiekwu, Oluwo, & Dada, 2021). Diligence scope has also widened to data protection, privacy and compliance obligations that transfer with a business, which Ominyi (2021) argues should be embedded in transaction structuring from the outset, and to bribery and money-laundering exposure across jurisdictions (Ominyi & Anichukwueze, 2021). Contractual exposure is a related concern: standardised contract review workflows and liability mitigation in high-value service contracts reduce the risk of undisclosed obligations (Uchechi & Ominyi, 2019; Uchechi et al., 2021), and statutory licensing and bidding compliance can be decisive in regulated sectors (Ominyi et al., 2020).

### Financial Ratio Analysis and Distress Prediction

The use of financial ratios to anticipate failure has a long history. Beaver (1966) showed that cash flow to debt and other ratios discriminate between failed and non-failed firms several years before failure. Altman (1968) combined working capital, retained earnings, profitability, market value of equity and asset turnover into the Z-score, which remains widely used as a distress indicator. Ohlson (1980) introduced a probabilistic logit model, Zmijewski (1984) corrected for sample selection bias, Altman, Haldeman and Narayanan (1977) developed the multi-variable ZETA model, hazard models incorporating market variables improved accuracy further (Shumway, 2001; Campbell, Hilscher, & Szilagyi, 2008), and Altman, Iwanicz-Drozdowska, Laitinen and Suvas (2017) confirmed the international validity of the Z-score. Building on this tradition, Piotroski (2000) demonstrated that a simple composite of nine accounting signals separates financially stronger from weaker firms.

A parallel stream examines earnings quality. Sloan (1996) found that the accrual component of earnings is less persistent than the cash component, Beneish (1999) developed a model to detect earnings manipulation, and Dechow, Ge and Schrand (2010) reviewed the many

dimensions of earnings quality. Dechow, Sloan and Sweeney (1995) evaluated alternative models for detecting earnings management, and Dichev, Graham, Harvey and Rajgopal (2013) found that executives regard sustainable, cash-backed earnings as the hallmark of quality.

More recent work extends ratio analysis toward forward-looking financial analytics, including predictive cash flow and working capital models (Tonoyan, Dada, & Ayivi-Donkor, 2021b), data-driven decision systems for strategic financial planning and capital allocation (Lawal & Oduleye, 2019, 2021a), cost management models that connect operational drivers to performance evaluation (Oduleye & Medon, 2021), and treasury architectures that consolidate cash flows and control foreign exchange exposure across subsidiaries (Dada, Isiekwu, & Oluwo, 2021). Forecasting research supports this forward-looking orientation, with machine learning methods improving revenue projection and budgeting accuracy (Tonoyan, Dada, & Ayivi-Donkor, 2021a; Adesuyi, Walawalkar, & Kalu, 2022) and analytics-driven models linking financial planning to corporate strategy and enterprise value creation (Lawal & Oduleye, 2018, 2021b). On the reliability of reported figures, studies of strategic accounting systems and financial reporting models emphasise transparency and accountability (Bola-Sadipe, Aliliele, & Eboh, 2019; Bola-Sadipe, Eboh, & Odihi, 2022; Medon & Oduleye, 2022), while machine learning advances in fraud detection complement traditional earnings manipulation models (Atakpa & Abetoh, 2022). Akomolafe and Agu (2019c) argue that financial resilience depends on integrating governance and compliance with financial management, a view that anticipates the cross-pillar logic developed in this paper. For diligence, this literature supports a focus on liquidity, leverage, debt service capacity, cash conversion and the reliability of reported earnings. Its limitation is that ratios describe outcomes that have already occurred; they are less informative about how operational fragility might transmit a future shock into financial distress.

Research on liquidity, and especially on the COVID-19 shock, strengthens the case for treating cash buffers and runway explicitly. Firms hold cash as a precaution against costly external finance (Opler, Pinkowitz, Stulz, & Williamson, 1999; Bates, Kahle, & Stulz, 2009), and financially constrained firms cut investment and employment sharply in crises (Campello, Graham, & Harvey, 2010). In early 2020, firms with more cash and lower leverage suffered smaller stock price declines (Ramelli & Wagner, 2020; Fahlenbrach, Rageth, & Stulz, 2021), and firms rushed to draw credit lines and build cash (Acharya & Steffen, 2020). Ding, Levine, Lin and Xie (2021) found that firms with stronger pre-pandemic finances, less exposure to global supply chains and less entrenched executives fared better, evidence that directly supports combining financial, supply and governance indicators. The cash conversion cycle provides a dynamic measure of liquidity (Richards & Laughlin, 1980), and shorter cycles are associated with higher profitability (Deloof, 2003).

## Supplier Concentration and Supply Chain Resilience

Supply chain resilience research gained momentum in the early 2000s. Christopher and Peck (2004) defined resilience as the ability of a system to return to its original state, or a better one, after disruption, and identified redundancy, flexibility and collaboration as key enablers. Sheffi and Rice (2005) argued that resilience is built through redundancy and, more durably, through flexibility, while Chopra and Sodhi (2004) set out a taxonomy of supply chain risks and corresponding mitigation strategies. Other agenda-setting work defined supply risk and its management (Jüttner, Peck, & Christopher, 2003; Zsidisin, 2003; Kleindorfer & Saad, 2005; Tang, 2006), and Sheffi (2005, 2015) documented how resilient enterprises prepare for and recover from disruption. Ponomarov and Holcomb (2009) integrated these views into a definition centred on readiness, response and recovery.

Pettit, Fiksel and Croxton (2010) conceptualised resilience as a balance between vulnerabilities and capabilities and later developed an assessment tool to measure it (Pettit, Croxton, & Fiksel, 2013), an approach that parallels the scoring logic of the present framework. Systematic reviews have since consolidated definitions and measurement approaches (Hohenstein, Feisel, Hartmann, & Giunipero, 2015; Tukamuhabwa, Stevenson, Busby, & Zorzini, 2015; Kamalahmadi & Parast, 2016; Hosseini, Ivanov, & Dolgui, 2019). Empirical evidence confirms that disruptions are costly: Hendricks and Singhal (2005) found that firms announcing supply chain disruptions experienced significantly negative abnormal stock returns and increased equity risk that persisted well beyond the announcement. Craighead, Blackhurst, Rungtusanatham and Handfield (2007) showed that disruption severity depends on supply chain density, complexity and node criticality, and Wagner and Bode (2008) found that supply-side risks are associated with lower supply chain performance.

A growing body of applied research, much of it focused on emerging markets and asset-intensive sectors, has proposed practical frameworks for managing these risks. Agbabiaka et al. (2019) developed a supply chain risk management model for engineering and gas processing projects, and Ogunwole et al. (2021) proposed a resilience framework for critical

infrastructure that emphasises redundancy and materials readiness. Anene (2021) reviewed post-disruption advances in risk management across global distribution networks, while Awulu, Obukadata and Williams (2022b) documented strategies for mitigating disruption and safeguarding product availability in pharmaceutical supply chains. Contractual mechanisms also matter: Uchechi et al. (2020) showed how force majeure provisions allocate disruption risk in energy supply chains, and Nnabueze et al. (2021) identified end-to-end visibility as a precondition for detecting emerging supply problems early.

Several further strands are relevant to diligence. Predictive analytics improves demand forecasting and reduces inventory inefficiency (Aifuwa et al., 2020), and real-time risk dashboards can flag supply problems as they develop (Filani et al., 2022). Early-warning models for shortages (Eze, Anene, & Akinleye, 2022a) and resilient logistics designs that combine predictive analytics with localised distribution (Anene & Clement, 2022) show how buffers and visibility narrow the gap between time-to-recover and time-to-survive. Logistics bottlenecks such as port demurrage (Okonkwo et al., 2020), materials readiness (Okonkwo, Agbabiaka, et al., 2021) and weak traceability across distribution chains (Aneke & Adesemoye, 2019) are additional sources of operational exposure. On the procurement side, strategic procurement optimisation, regulatory-compliant purchasing, process automation and negotiation models strengthen both cost and control (Okonkwo, Ogunwole, & Okeke, 2018a; Okonkwo, Ogunwole, et al., 2021; Akinleye & Adeyoyin, 2021, 2022a); ERP-integrated procurement and automated supplier payments improve transparency and supplier performance benchmarking (Ahiaeke Patrick et al., 2020; Akomolafe et al., 2022); and profitability analysis of procurement operations clarifies the margin impact of sourcing decisions (Akin-Oluyomi et al., 2020). Sustainable and ESG-integrated procurement broadens the supplier risk lens further (Okojie et al., 2020; Efobi, Akinleye, & Fasawe, 2022a), while supply chain talent development builds the capability needed to manage these risks (Falemi, Akhigbe, & Akin-Oluyomi, 2020).

Supplier concentration is a central driver of exposure. Kraljic (1983) proposed classifying purchased items by profit impact and supply risk, highlighting the vulnerability created by strategic items with few qualified sources. Supplier relationship management can partly offset concentration risk by deepening collaboration and joint contingency planning with critical suppliers (Ike et al., 2021; Akinleye & Adeyoyin, 2022b), and structured vendor evaluation and vendor governance improve both cost and risk outcomes (Okonkwo et al., 2019; Ahiaeke Patrick et al., 2021). Concentration can be measured using the Herfindahl-Hirschman Index (HHI), originally developed for market structure analysis (Rhoades, 1993), applied here to the distribution of purchasing spend across suppliers. Analytical work on sourcing strategy shows that single sourcing lowers cost but raises exposure, and that the value of mitigation through dual sourcing or inventory depends on the frequency and duration of disruptions (Treleven & Schweikhart, 1988; Tomlin, 2006). Simchi-Levi, Schmidt and Wei (2014) introduced two practical measures, time-to-recover (TTR) and time-to-survive (TTS), which compare how long a node takes to be restored with how long the firm can continue to meet demand without it. Research during the pandemic emphasised the systemic, network-level nature of these risks and the concept of supply chain viability (Ivanov, 2020; Ivanov & Dolgui, 2020). Ivanov (2021) generalised four adaptation strategies for maintaining viability, and Chowdhury, Paul, Kaisar and Moktadir (2021) reviewed the rapidly growing pandemic-related supply chain literature.

## Process Performance and Operational Capability

Operations management offers well-established measures of process capability. Overall equipment effectiveness combines availability, performance and quality into a single indicator of productive efficiency (Nakajima, 1988; Muchiri & Pintelon, 2008). Delivery reliability, commonly measured as on-time-in-full, reflects the ability of the process to translate capacity into customer outcomes. Hopp and Spearman (2008) formalised the relationship between variability, utilisation and lead time, showing that systems operated close to capacity with high variability exhibit long and unstable cycle times. Little (1961) established the relationship between inventory, throughput and flow time that underpins working capital analysis. Six Sigma research links process discipline to reduced defect rates and more predictable outcomes (Linderman, Schroeder, Zaheer, & Choo, 2003; Schroeder, Linderman, Liedtke, & Choo, 2008), and lean practice bundles are associated with superior operational performance (Shah & Ward, 2003).

Lean Six Sigma adaptations for resource-constrained organisations (Ambali et al., 2021) and lean supply chain practices (Ike et al., 2022; Efobi, Akinleye, & Fasawe, 2022b) show how waste reduction and flow discipline improve both efficiency and responsiveness. Awulu, Obukadata and Williams (2022a) set out key operational metrics and benchmarking practices for manufacturing, Agboada et al. (2018) reviewed how automation, analytics and process redesign are reshaping operations management, and research on reliability-centred maintenance links equipment availability to operating cost and continuity (Obetta, 2020).

Standard operating procedures act as infrastructure for sustaining improvement (Agboada et al., 2019; Eyetsemitan et al., 2022), and Lean Six Sigma redesign has shortened cycle times in professional services and relieved distribution bottlenecks in healthcare (Oyeleye et al., 2022; Obukadata, Awulu, & Williams, 2021a). Digital transformation and

automation have raised operational performance in regulated manufacturing (Obukadata, Awulu, & Williams, 2021b), and corrective and preventive action systems grounded in root-cause analysis sustain quality gains (Aneke, Adesemoye, & Sydney, 2022). Predictive and condition-based maintenance models improve asset availability and anticipate failures before they disrupt output (Obetta & Ninduwezuor-Ehiobu, 2018; Mayo et al., 2021; Komi & Adamolekun, 2021), and predictive capacity planning supports resource utilisation across complex portfolios (Edivri & Oteri, 2022). Maturity models for standardising support operations and for balancing cost against continuity offer transferable lessons for assessing recovery capability (Anyanwu, 2019, 2020).

Performance measurement research, notably Neely, Gregory and Platts (1995) and the balanced scorecard of Kaplan and Norton (1992), established that operational measures act as leading indicators of financial results. Later work on key performance indicator frameworks stresses accountability and cross-functional alignment around a focused set of measures (Sakyi et al., 2022). Cross-functional KPI frameworks and machine learning-based cost optimisation strengthen the link between process improvement and financial outcomes (Seyi-Lande, Arowogbadamu, & Oziri, 2022; Tonoyan, Dada, & Ayivi-Donkor, 2022b). Taken together, this literature suggests that process performance determines both the efficiency of a business in normal conditions and its capacity to absorb and recover from shocks.

## Corporate Governance and Resilience

Agency theory explains why governance matters: managers may pursue interests that diverge from those of owners and creditors, and monitoring mechanisms reduce the resulting costs (Jensen & Meckling, 1976; Shleifer & Vishny, 1997). Boards sit at the apex of the internal control system (Fama & Jensen, 1983), and their composition and effectiveness have been studied extensively (Adams, Hermalin, & Weisbach, 2010). Governance quality has been associated with firm value (Gompers, Ishii, & Metrick, 2003; Bebchuk, Cohen, & Ferrell, 2009), and board composition has been linked to the likelihood of financial statement fraud (Beasley, 1996), and audit committee independence has been associated with lower earnings management (Klein, 2002). Graham, Harvey and Rajgopal (2005) documented the willingness of managers to sacrifice economic value to meet earnings targets, underlining the importance of oversight in diligence. Normative frameworks, including the G20/OECD Principles of Corporate Governance (OECD, 2015) and the COSO enterprise risk management framework (COSO, 2017), describe the structures and processes through which boards oversee risk.

Research on internal audit and control design shows that technology-enabled risk assessment and risk-based internal control models improve audit quality and the timeliness of risk detection (Akomolafe & Agu, 2018, 2019a), and that automating IT general controls strengthens assurance over financial reporting (Mbonu et al., 2022). Data-driven risk evaluation models developed for emerging market financial institutions apply similar principles (Akomolafe & Agu, 2019b).

Governance has also moved into digital operations: risk-based business intelligence architectures, legal and ethical risk modelling, and IT risk controls embedded in supply chain transformation extend oversight to technology-dependent processes (Mbonu et al., 2018, 2020, 2021), while real-time compliance pipelines and tamper-proof record-keeping support continuous audit readiness (Oshoba, Hammed, & Odejobi, 2020; Anichukwueze, Osuji, & Oguntegbe, 2021; Uchechi et al., 2022). Cyber risk is now a governance issue with direct financial consequences: risk-based cybersecurity assurance, incident response capability and secure convergence of information and operational technology all bear on operational continuity (Fadayomi et al., 2019; Ahmed, Adegbite, & Adebayo, 2021; Dosunmu & Ogundele, 2021; Adegbite, Adebayo, & Ahmed, 2022), and cybersecurity investment has been linked to financial performance (Ozowara, Adebayo, & Anunagba, 2022). Enterprise risk assessment frameworks extend the same logic to information systems (Dosunmu & Ogundele, 2019). Quantitative cyber risk valuation expresses these exposures in monetary terms that boards can weigh alongside financial risks (Smart, 2020), operational resilience frameworks integrate risk, control and analytics into a single view of service continuity (Ashore-Onisemo & Unamma, 2022), and studies of business continuity and disaster recovery preparedness in African financial services during the COVID-19 pandemic draw lessons directly relevant to resilience assessment (Fadero et al., 2020). Governance also operates across organisational boundaries: Eyetsemitan et al. (2020) examined governance alignment among joint venture partners, while Ominyi et al. (2021) and Akin-Oluyomi and Akhigbe (2022) proposed models for governing compliance and quality across multi-party supply networks.

Culture and capability matter as well: ethics and compliance training, governance-oriented contractor management, internal quality, health, safety and environment audits, and organisational learning maturity models show how oversight shapes behaviour and performance (Anichukwueze, Osuji, & Oguntegbe, 2020; Arumosoye & Obriki, 2020, 2021; Obogo, Arumosoye, & Obriki, 2020), and structured recruitment and integration of talent reduce dependence on a small number of individuals (Akhigbe, Wikiri, & Udeh, 2020). For resilience, governance matters because it shapes whether risks are identified early, whether information reaches decision makers in time, and whether the organisation can make difficult decisions quickly during a crisis.

Empirical evidence links these mechanisms to outcomes that matter in diligence. Internal control weaknesses are more

**Table 1:** Resilience properties and their mapping to diligence pillars

| *Resilience property* | *Question for diligence* | *Primary pillar(s)* |
|---|---|---|
| Absorptive capacity | Can the firm withstand a loss of revenue or a cost increase without breaching obligations? | Financial resilience |
| Exposure | How likely is a shock to reach the firm, and how concentrated are its critical dependencies? | Supplier concentration |
| Recovery capability | How efficiently and quickly can operations restore output after disruption? | Process performance |
| Decision capability | Will risks be recognised early and acted upon effectively by leadership? | Governance quality |

Source: Author's synthesis based on Christopher and Peck (2004), Ponomarov and Holcomb (2009) and Williams et al. (2017).

common in firms that are smaller, younger, financially weaker, more complex or growing rapidly (Doyle, Ge, & McVay, 2007). Enterprise risk management adoption is associated with board independence and senior leadership support (Beasley, Clune, & Hermanson, 2005) and with higher firm value (Hoyt & Liebenberg, 2011), although its performance effect depends on the fit between ERM and the firm's context (Gordon, Loeb, & Tseng, 2009). Related-party transactions can transfer value away from outside investors (Cheung, Rau, & Stouraitis, 2006), and the sudden loss of senior executives produces measurable changes in firm value, underscoring key-person risk (Johnson, Magee, Nagarajan, & Newman, 1985).

### Organisational Resilience

Organisational resilience research conceptualises resilience as a capacity to anticipate, absorb, adapt to and recover from adversity (Hamel & Valikangas, 2003; Linnenluecke, 2017). Weick and Sutcliffe (2007) described the mindful organising practices of high-reliability organisations, Lengnick-Hall, Beck and Lengnick-Hall (2011) linked resilience capacity to human resource practices, and Duchek (2020) proposed a capability-based view distinguishing anticipation, coping and adaptation. Williams, Gruber, Sutcliffe, Shepherd and Zhao (2017) integrated crisis management and resilience research, distinguishing resilience as a process that unfolds before, during and after adversity. Empirical studies show that resilient firms exhibit lower financial volatility, higher survival rates and faster recovery (Ortiz-de-Mandojana & Bansal, 2016; DesJardine, Bansal, & Yang, 2019). This literature provides the theoretical justification for treating resilience as a multidimensional construct, but it offers limited guidance on how to measure it within the time and data constraints of a commercial engagement.

Taken together, the review points to three limitations in existing work. First, financial distress models and supply chain resilience research have developed largely in parallel, with few attempts to connect operational exposure to financial capacity within a single assessment. Second, governance is typically treated as a compliance matter rather than as a determinant of the speed and quality of crisis response. Third, the consulting literature lacks a transparent, replicable framework that practitioners can apply consistently across engagements. The framework developed in this study responds to these limitations.

## Conceptual Model and Propositions

Drawing on the literature, this paper defines business resilience as *the capacity of a firm to absorb an adverse shock, continue to meet its essential obligations to customers and creditors, and recover to its prior trajectory within an acceptable period*. This definition contains three properties that map onto the four pillars of the framework, as summarised in Table 1.

The central premise of the framework is that these properties interact. Supplier concentration determines the probability and severity of an operational shock; process performance determines how long the shock lasts; financial resilience determines whether the firm can fund the gap; and governance determines whether the response is timely. A deficiency in any one property can therefore negate strength in the others. Four propositions follow:

*Proposition 1*

Integrated assessments that combine financial, supply, process and governance indicators predict post-shock performance better than financial indicators alone.

*Proposition 2*

The effect of supplier concentration on post-shock financial outcomes is moderated by process recovery capability, measured by the ratio of time-to-recover to time-to-survive.

*Proposition 3*

Governance quality moderates the relationship between operational exposure and recovery speed, because stronger oversight accelerates detection and response.

*Proposition 4*

Resilience is constrained by its weakest pillar, so non-

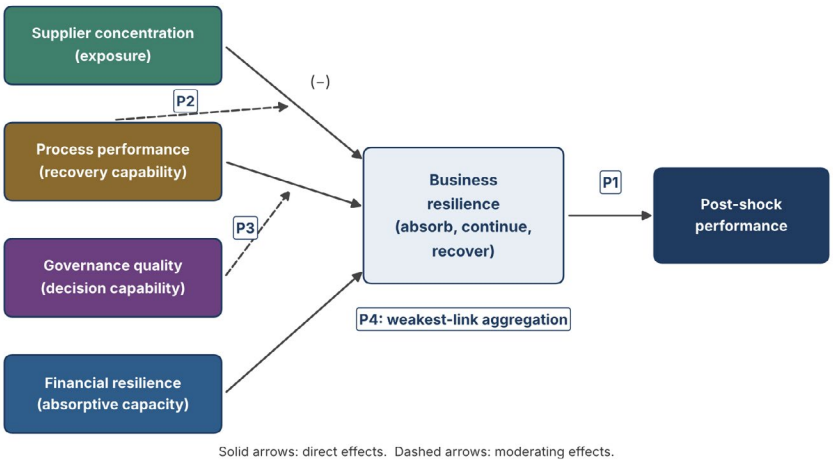



**Figure 1:** *Conceptual model of business resilience in due diligence*

compensatory aggregation rules identify vulnerable firms more accurately than purely additive scores.

Figure 1 summarises the conceptual model. Supplier concentration reduces resilience by increasing exposure, while process performance and financial resilience strengthen it by shortening recovery and funding the gap. Process recovery capability moderates the effect of concentration (Proposition 2), governance quality moderates the speed with which exposure is converted into recovery (Proposition 3), and the pillars combine through weakest-link rather than fully compensatory logic (Proposition 4). Business resilience in turn shapes post-shock performance, the relationship that an integrated assessment is expected to predict (Proposition 1).

## The Integrated Resilience Due Diligence Framework

### Architecture

The IRDDF operates in three stages, illustrated in Figure 2. In Stage 1, consultants collect evidence for each pillar and convert raw indicators to a common 0 to 100 scale. In Stage 2, pillar scores are aggregated into a Business Resilience Index (BRI), and gating rules are applied to prevent compensation across pillars. In Stage 3, stress scenarios translate the identified vulnerabilities into financial outcomes, and the results inform a rating and a prioritised remediation roadmap.

### Pillar 1: Financial Resilience

The financial pillar measures absorptive capacity: the extent to which the firm can withstand reduced earnings or cash flow while continuing to meet its obligations. Six indicators are used, drawing on the distress prediction and earnings quality literatures. Indicators are calculated on a normalised, quality-of-earnings adjusted basis, so that one-off items, aggressive capitalisation and unsustainable working capital movements do not

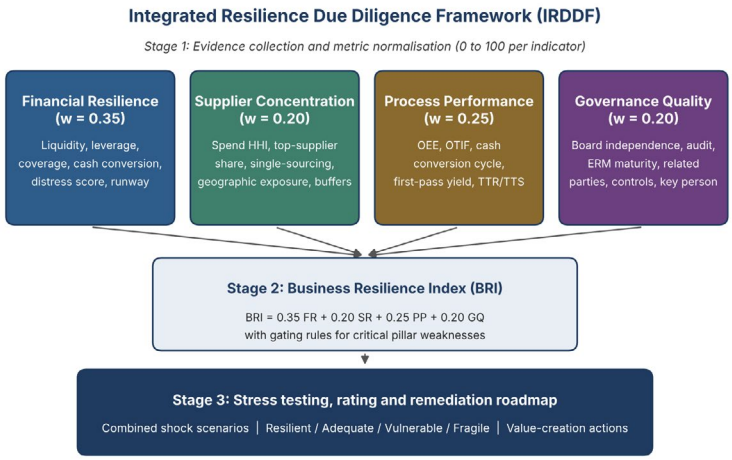



**Figure 2:** *Architecture of the Integrated Resilience Due Diligence Framework*

**Table 2:** Financial resilience indicators and normalisation thresholds

| *Indicator* | *Definition* | *Weak (score 0)* | *Strong (score 100)* |
|---|---|---|---|
| Current ratio | Current assets / current liabilities | 1.0x or below | 2.0x or above |
| Net debt / EBITDA | Net debt / adjusted EBITDA | 4.0x or above | 1.0x or below |
| Interest coverage | EBIT / net interest expense | 1.5x or below | 6.0x or above |
| Cash conversion | Operating cash flow / EBITDA | 0.50 or below | 0.90 or above |
| Distress score | Altman Z-score (or Z″ for private and non-manufacturing firms) | 1.8 or below | 3.0 or above |
| Cash runway | Months of fixed costs and debt service covered by cash and committed undrawn facilities | 3 months or below | 12 months or above |

**Note:** Thresholds for the distress score follow the conventional zones identified by Altman (1968). Other thresholds reflect common lender covenant levels and should be calibrated by sector.

distort the assessment. Table 2 sets out the indicators and the thresholds used for normalisation.

## Pillar 2: Supplier Concentration

The supplier pillar measures exposure: the probability and severity with which an external disruption can reach the firm through its supply base. The core metric is the Herfindahl-Hirschman Index of purchasing spend, calculated as:

$$HHI = \Sigma (s_i \times 100)^2, \quad i = 1 \ldots n$$

where $s_i$ is the share of total addressable spend with supplier *i*. Following the conventions used in competition analysis (Rhoades, 1993), values below 1,500 indicate a diversified base and values above 2,500 indicate high concentration. Because aggregate HHI can conceal dependencies on a small number of critical components, it is complemented by measures of single-sourcing among critical inputs, geographic concentration and buffer inventory, as shown in Table 3. Critical inputs are identified using the supply risk and profit impact dimensions of Kraljic (1983). Buffer inventory is included because the availability of critical materials is directly linked to plant uptime and service continuity (Okonkwo, Ogunwole, & Okeke, 2018b).

## Pillar 3: Process Performance

The process pillar measures recovery capability: how efficiently the firm converts inputs into customer outcomes and how quickly it can restore output after disruption. It combines efficiency measures with an explicit recovery measure, the ratio of time-to-recover to time-to-survive (Simchi-Levi et al., 2014). A ratio above 1.0 indicates that, for the most critical node, recovery would take longer than the firm can continue to supply customers from buffers and alternatives, implying a period of lost sales.

## Pillar 4: Governance Quality

Governance indicators are largely qualitative and are therefore assessed using a behaviourally anchored rubric. Each dimension is scored from 1 (weak) to 5 (strong) on the basis of documentary evidence, interviews with directors and management, and testing of selected controls. To reduce subjectivity, each score is supported by a written rationale and reviewed by a second assessor. The rubric follows the logic of maturity models used for regulatory readiness and operational standardisation (Anyanwu, 2019; Eze, Anene, & Akinleye, 2022b). Table 5 summarises the rubric anchors.

## Normalisation and Aggregation

Quantitative indicators are converted to a 0 to 100 score by linear interpolation between the weak and strong thresholds, with values beyond the thresholds

**Table 3:** Supplier concentration indicators and normalisation thresholds

| *Indicator* | *Definition* | *Weak (score 0)* | *Strong (score 100)* |
|---|---|---|---|
| Spend HHI | Herfindahl-Hirschman Index of addressable spend | 2,500 or above | 1,000 or below |
| Top-supplier share | Share of spend with the largest supplier | 40% or above | 10% or below |
| Single-sourced critical inputs | Share of critical inputs with only one qualified source | 50% or above | 10% or below |
| Geographic concentration | Share of critical-input spend sourced from one country | 70% or above | 30% or below |
| Critical-input buffer | Days of demand covered by safety stock and supplier-held inventory | 15 days or below | 60 days or above |

**Table 4:** Process performance indicators and normalisation thresholds

| *Indicator* | *Definition* | *Weak (score 0)* | *Strong (score 100)* |
|---|---|---|---|
| Overall equipment effectiveness | Availability × performance × quality at the constraint process | 55% or below | 85% or above |
| On-time-in-full (OTIF) | Share of orders delivered on the committed date and in full | 80% or below | 97% or above |
| Cash conversion cycle | Inventory days + receivable days minus payable days | 120 days or above | 45 days or below |
| First-pass yield | Share of units passing quality checks without rework | 85% or below | 99% or above |
| TTR / TTS ratio | Time-to-recover / time-to-survive for the most critical node | 1.5 or above | 0.5 or below |

capped. For an indicator where higher values are better, the score is:

Score = min(100, max(0, (x − Weak) / (Strong − Weak) × 100))

The same formula applies when lower values are better, since the weak threshold is then numerically larger than the strong threshold and the denominator is negative. Each pillar score is the simple average of its indicator scores, and the Business Resilience Index is the weighted sum of the four pillar scores:

BRI = 0.35 FR + 0.20 SR + 0.25 PP + 0.20 GQ

This min-max normalisation and linear aggregation follow established guidance on constructing composite indicators, which also calls for transparency about weights and for sensitivity testing of aggregation choices (OECD & Joint Research Centre, 2008).

## Weighting Rationale

The default weights reflect the role of each pillar in the resilience chain. Financial resilience receives the highest weight because it ultimately determines whether a firm can fund its way through disruption and because it is the dimension most directly linked to default and creditor outcomes in the distress literature. Process performance receives the second highest weight because it governs both normal-state efficiency and recovery speed. Supplier concentration and governance receive equal weights. These defaults are a starting point rather than a fixed prescription. Practitioners may recalibrate weights for sectors where one dimension is especially important, for example by increasing the supplier weight for electronics assembly or the governance weight for regulated financial services, using structured expert elicitation such as the analytic hierarchy process (Saaty, 1980). Any change to the weights should be documented and justified in the diligence report.

**Table 5:** Governance quality rubric

| *Dimension* | *Score 1 (weak)* | *Score 3 (developing)* | *Score 5 (strong)* |
|---|---|---|---|
| Board independence and composition | Owner-managers only; no independent oversight | Some independent members; limited relevant expertise | Majority independent; skills matrix aligned to strategy and risk |
| Audit oversight | No audit committee; unqualified finance team | Audit committee exists; limited financial expertise | Independent audit committee with financial expert; active internal audit |
| Enterprise risk management | No risk register or ad hoc only | Risk register maintained but not linked to decisions | Integrated ERM with risk appetite, scenarios and board review (COSO, 2017) |
| Related-party exposure | Material undisclosed or non-arm's-length transactions | Disclosed but material and weakly controlled | Minimal, disclosed and independently approved |
| Internal controls | Material weaknesses; frequent manual overrides | Significant deficiencies under remediation | Documented, tested controls with no significant deficiencies |
| Key-person dependence | Critical knowledge and relationships held by one individual | Partial succession plans | Documented succession and distributed critical knowledge |

Note: Scores of 2 and 4 are used where evidence falls between anchors. Rubric scores are converted to the 0 to 100 scale as (score minus 1) / 4 × 100.

**Table 6:** Business Resilience Index rating bands

| *Rating* | *BRI range* | *Gating condition* | *Typical implication for decision makers* |
|---|---|---|---|
| Resilient | 75 to 100 | No pillar below 40 | Proceed; standard monitoring and covenant package |
| Adequate | 60 to 74 | No pillar below 40 | Proceed with targeted improvement plan in first 100 days |
| Vulnerable | 40 to 59 | Or any pillar below 40 | Price or structure for identified risk; remediation as condition or covenant |
| Fragile | Below 40 | Or any pillar below 20 | Reconsider transaction or require pre-closing remediation and downside protection |

## Gating Rules and Rating Bands

A purely additive index allows strong performance in one pillar to offset critical weakness in another. Since resilience is constrained by its weakest link (Proposition 4), the framework applies two gating rules. A pillar score below 40 is classified as a critical weakness and caps the overall rating at Vulnerable. A pillar score below 20 is classified as a binding constraint and caps the overall rating at Fragile. The resulting rating bands and their typical implications are summarised in Table 6.

## Stress-Testing Module

The final stage converts operational findings into financial consequences. Consultants define a minimum of three scenarios: a demand shock, a supply shock targeted at the most concentrated critical input, and a combined scenario. This design follows supervisory principles for sound stress testing, which emphasise severe but plausible scenarios, combined shocks and reverse stress tests that identify the conditions under which a business would fail (Basel Committee on Banking Supervision, 2009). The supply shock uses the observed time-to-survive and an estimated time-to-recover to calculate the duration of lost output, which is then applied to the share of revenue dependent on the affected input. Lost revenue is converted to lost EBITDA at the contribution margin, and incremental expediting or substitution costs are added. Each scenario is assessed against covenant levels and liquidity headroom. Simulation and financial impact assessment techniques developed for process optimisation (Tonoyan, Dada, & Ayivi-Donkor, 2022a) are well suited to building these scenarios. Regulatory scenario analysis that maps fiscal and policy changes to sectoral impacts (Akinola et al., 2020) can extend the module to regulatory shocks. The

**Table 7:** Engagement process for resilience-oriented due diligence

| *Phase* | *Key activities* | | |
|---|---|---|---|
| 1. Scoping | Agree objectives, materiality thresholds and sector calibration; issue data request | Engagement charter; tailored indicator set; data request list | Week 1 |
| 2. Evidence collection | Analyse financial statements and management accounts; extract supplier spend and purchasing data; collect operational KPIs; review board papers and control documentation | Validated data book; quality-of-earnings adjustments | Weeks 1 to 3 |
| 3. Site and management assessment | Site visits; process walk-throughs at the constraint; interviews with directors, finance, procurement and operations leaders | Process observations; governance rubric evidence | Weeks 2 to 4 |
| 4. Scoring and integration | Normalise indicators; compute pillar scores and BRI; apply gating rules; peer review of rubric scores | Resilience scorecard; draft rating | Weeks 4 to 5 |
| 5. Stress testing | Build and run demand, supply and combined scenarios against covenants and liquidity | Scenario outputs; value-at-risk estimates | Weeks 5 to 6 |
| 6. Reporting and roadmap | Synthesise findings; prioritise remediation; propose deal protections and 100-day actions | Final report; remediation roadmap | Weeks 6 to 8 |

**Table 8:** Company A: indicator values and normalised scores

| *Pillar* | *Indicator* | *Value* | *Score* |
|---|---|---|---|
| Financial resilience | Current ratio | 1.80x | 80.0 |
| | Net debt / EBITDA | 1.90x | 70.0 |
| | Interest coverage | 5.2x | 82.2 |
| | Cash conversion | 0.84 | 85.0 |
| | Altman Z-score | 2.9 | 91.7 |
| | Cash runway | 10 months | 77.8 |
| | Pillar score (FR) | | 81.1 |
| Supplier concentration | Spend HHI | 2,850 | 0.0 |
| | Top-supplier share | 34% | 20.0 |
| | Single-sourced critical inputs | 45% | 12.5 |
| | Geographic concentration | 62% | 20.0 |
| | Critical-input buffer | 22 days | 15.6 |
| | Pillar score (SR) | | 13.6 |
| Process performance | Overall equipment effectiveness | 74% | 63.3 |
| | On-time-in-full | 93% | 76.5 |
| | Cash conversion cycle | 72 days | 64.0 |
| | First-pass yield | 96% | 78.6 |
| | TTR / TTS ratio | 1.1 | 40.0 |
| | Pillar score (PP) | | 64.5 |
| Governance quality | Board independence | 4 of 5 | 75.0 |
| | Audit oversight | 4 of 5 | 75.0 |
| | Enterprise risk management | 3 of 5 | 50.0 |
| | Related-party exposure | 4 of 5 | 75.0 |
| | Internal controls | 3 of 5 | 50.0 |
| | Key-person dependence | 2 of 5 | 25.0 |
| | Pillar score (GQ) | | 58.3 |

Note: Illustrative data. Scores computed using the thresholds in Tables 2 to 5.

stress test serves two purposes: it validates the pillar scores by showing whether the identified weaknesses matter financially, and it quantifies the value at stake in remediation.

### Implementation Protocol

In practice, the IRDDF is designed to fit the timeline of a typical transaction diligence, which commonly runs between four and eight weeks. Table 7 sets out the engagement phases, the main activities in each phase and the outputs produced.

Data sources include audited and management accounts, general ledger extracts, accounts payable and purchasing ledgers, bills of materials, production and quality systems, customer service records, board minutes, risk registers and internal audit reports. Wherever possible, management-reported operational metrics should be recalculated from source data, since diligence experience shows that self-reported measures such as OTIF are frequently defined in ways that flatter performance. Standardised reporting and decision workflows improve the quality and comparability of such data (Alieme, Sule, & Obukadata, 2022), and integrated visualisation models allow teams to track performance indicators continuously during and after the transaction (Ogbole et al., 2021). Supplier data should be cleaned to consolidate entities belonging to the same corporate group, as failure to do so understates concentration. Appendix A provides a summary data request checklist.

Quality assurance relies on three mechanisms: reconciliation of operational data to financial records (for example, inventory quantities to the balance sheet), dual scoring of governance rubric items by independent assessors, and sensitivity analysis showing how the BRI and rating would change under alternative weights and thresholds.

## Illustrative Application

### Context

To demonstrate the framework, this section applies it to a stylised case constructed from patterns commonly observed in mid-market industrial diligence. The case is illustrative and does not describe any specific company. Company A is a privately owned manufacturer of specialty electronic components with revenue of $180 million and adjusted EBITDA of $27 million (a 15% margin) for the 2021 financial year. A private equity client is considering acquiring a majority stake and has requested a resilience-oriented diligence following the

**Table 9:** Company A: stress-test results

| *Scenario* | *Revenue ($m)* | *EBITDA ($m)* | *Net debt / EBITDA* | *Headroom to 3.5x covenant* |
|---|---|---|---|---|
| Base case (FY2021) | 180.0 | 27.0 | 1.90x | 45.7% |
| S1: Demand shock (revenue down 10%) | 162.0 | 19.8 | 2.59x | 26.0% |
| S2: Eight-week outage at top supplier | 173.1 | 23.2 | 2.21x | 36.9% |
| S3: Combined demand and supply shock | 155.8 | 16.3 | 3.15x | 10.0% |
| S3 after remediation | 161.0 | 19.1 | 2.82x | 19.4% |

Note: Illustrative figures. Headroom is calculated as (3.5 minus the leverage multiple) / 3.5. The remediated scenario includes $2.5 million of additional net debt to fund the inventory build.

supply disruptions of 2021. Net debt is $51.3 million, and the proposed financing includes a maximum net leverage covenant of 3.5x.

## Pillar Results

Table 8 presents the raw indicators and normalised scores. Company A performs strongly on financial metrics: leverage is moderate, interest is well covered, cash conversion is good, and the distress score sits close to the safe zone. Process performance is reasonable, although the TTR/TTS ratio indicates that recovery from a failure at the most critical node would outlast available buffers. Governance is developing, with a capable board but limited risk management maturity and a high dependence on the founder for key customer and supplier relationships. The supplier pillar, however, reveals severe exposure: spend is highly concentrated, the largest supplier accounts for 34% of spend, nearly half of critical inputs are single-sourced, and most critical spend comes from a single country, with only 22 days of buffer.

## Composite Result and Interpretation

Applying the default weights gives a Business Resilience Index of $0.35 \times 81.1 + 0.20 \times 13.6 + 0.25 \times 64.5 + 0.20 \times 58.3 = 58.9$. On the numeric score alone, Company A would fall in the Vulnerable band. However, the supplier pillar score of 13.6 is below the binding-constraint threshold of 20, so the gating rule caps the overall rating at Fragile.

The contrast with a conventional, financial-only diligence is striking. A financial review would rate Company A as healthy, with a financial pillar score of 81.1 that would sit comfortably in the Resilient band. The integrated assessment shows that this financial strength rests on a narrow and exposed supply base, and that the business lacks the process buffers and risk management maturity needed to contain a supplier failure. This finding illustrates Proposition 4 and demonstrates why gating rules are necessary: without them, strong financial performance would partially mask a vulnerability that could threaten the investment thesis.

## Stress Test

The stress-testing module quantifies the financial significance of these findings. Three scenarios were modelled, using a contribution margin of 40% and holding net debt constant for simplicity. The demand shock assumes a 10% fall in revenue. The supply shock assumes an eight-week outage at the largest supplier, which supplies inputs used in product lines generating 40% of revenue; with roughly three weeks of buffer,

**Table 10:** Conventional diligence compared with the IRDDF

| *Dimension* | *Conventional siloed diligence* | *Integrated Resilience Due Diligence Framework* |
|---|---|---|
| Structure | Separate financial, operational and legal reports | Single integrated assessment with pillar-level detail |
| Orientation | Primarily historical performance and point-in-time position | Historical performance plus forward-looking recovery capability |
| Supplier risk | Often qualitative or limited to top-ten supplier lists | Quantified concentration, single-sourcing, geography and buffers |
| Governance | Compliance and legal perspective | Assessed as a determinant of crisis response capability |
| Aggregation | Implicit, based on reader judgement | Explicit weights and non-compensatory gating rules |
| Downside testing | Mainly financial sensitivities | Combined operational and financial stress scenarios |
| Output | Risk lists by workstream | Resilience rating, quantified value at risk and remediation roadmap |

about five weeks of output are lost on those lines, and $1.0 million of expediting and requalification cost is incurred. The combined scenario applies both shocks together. Results are shown in Table 9.

Neither shock alone threatens the covenant, which is consistent with the favourable financial pillar score. The combined scenario, however, reduces covenant headroom to 10%, leaving almost no margin for forecasting error, seasonal working capital swings or a longer outage. This is precisely the interaction that siloed diligence tends to miss: the financial workstream tests the demand shock, the operational workstream notes the supplier concentration, but neither connects the two into a combined downside.

### Remediation and Re-Scoring

The diligence team proposed a remediation programme to be implemented within the first twelve months of ownership, with selected actions made conditions of the transaction:

- Qualify a second source for the highest-risk critical inputs, reducing single-sourcing from 45% to 20% and the top-supplier share from 34% to 20%.
- Shift part of critical-input sourcing to a second region, reducing geographic concentration from 62% to 48%, and lowering spend HHI to approximately 1,650.
- Build strategic buffer inventory for critical inputs to 45 days of demand, funded within the transaction structure.
- Establish a formal enterprise risk management process with board-level review and documented supplier risk scenarios.
- Implement a succession and relationship transition plan for the founder's key supplier and customer relationships.

Re-scoring with these changes raises the supplier pillar from 13.6 to 64.0 and the governance pillar from 58.3 to 66.7, giving a revised BRI of 70.6. No pillar falls below 40, so the rating improves to Adequate. In the combined stress scenario, the remediated business retains 19.4% covenant headroom, nearly double the unremediated level. For the client, the framework thus produced three practical outputs: a clear statement of the principal risk, a quantified estimate of its financial consequences, and a costed plan that could be reflected in valuation, deal terms and the 100-day plan.

## Discussion

The illustrative application highlights the central argument of the study: business resilience emerges from the interaction of financial capacity, supply exposure, process recovery and governance, and an assessment confined to one dimension can reach a misleading conclusion. In the case, a financial pillar score of 81.1 would have supported a favourable view under a conventional review, yet the integrated assessment rated the business Fragile because of a binding supply constraint. This pattern is consistent with evidence from the COVID-19 shock, in which firms with strong pre-pandemic finances but heavy exposure to global supply chains fared worse than their balance sheets alone would suggest (Ding et al., 2021), and with earlier findings that supply disruptions carry lasting financial penalties (Hendricks & Singhal, 2005).

The results also show why non-compensatory aggregation matters. The weighted index of 58.9 placed the firm in the Vulnerable band, but the gating rule moved it to Fragile, reflecting the weakest-link character of resilience emphasised in supply network research (Ivanov & Dolgui, 2020; Pettit et al., 2013). Guidance on composite indicators similarly cautions that fully compensatory aggregation can obscure critical deficits (OECD & Joint Research Centre, 2008).

The stress test indicated that neither the demand shock nor the supply shock alone threatened covenant compliance, whereas the combined scenario reduced headroom to 10%. This underlines the importance of combined scenarios, which supervisory practice recommends (Basel Committee on Banking Supervision, 2009), and is consistent with viewing diligence failure as a problem of detecting weak signals that only become meaningful in combination (Puranam et al., 2006). The remediation results show that targeted supply and governance actions can move a business from Fragile to Adequate, in line with evidence that operational and governance improvements are central to value creation in private ownership (Acharya et al., 2013; Bernstein & Sheen, 2016).

Table 10 contrasts the IRDDF with conventional siloed diligence. The principal differences lie in the integration of evidence, the explicit treatment of interactions and the emphasis on forward-looking recovery capability rather than historical performance alone.

## Implications

### Theoretical Implications

The framework contributes to the resilience literature by operationalising a multidimensional construct in a form suitable for time-constrained, evidence-based assessment. It connects the distress prediction tradition (Altman, 1968; Ohlson, 1980) with supply chain resilience research (Sheffi & Rice, 2005; Simchi-Levi et al., 2014) through an explicit transmission mechanism: supplier concentration determines exposure, process recovery capability determines the duration of disruption, financial capacity determines whether the gap can be funded, and governance determines the speed of

response. The use of non-compensatory gating rules reflects the view that resilience depends on the weakest element of the system, a perspective consistent with research on supply network viability (Ivanov & Dolgui, 2020). The propositions in Section 4 offer a basis for testing these relationships empirically.

### Practical Implications

For management consultants, the IRDDF provides a common language across diligence workstreams and a transparent basis for prioritising findings. It encourages teams to test interactions between dimensions rather than reporting them in isolation, and it produces outputs that link directly to valuation, deal structuring and post-transaction planning. For investors and lenders, the BRI and its rating bands offer a concise summary that complements, rather than replaces, detailed workstream reports. This integrated view is consistent with the argument that financial resilience is strengthened when governance, compliance and financial management are designed together (Akomolafe & Agu, 2019c). The stress-testing module supports the design of covenants and contingency facilities that reflect operational as well as financial risk. For management teams of target companies, the framework identifies concrete improvement actions that can strengthen resilience and, in many cases, increase valuation.

## Limitations

The framework has several limitations. First, the thresholds and weights are derived from the literature and practitioner conventions rather than estimated empirically, so they require calibration and validation across sectors. Second, the governance rubric depends on assessor judgement; although dual scoring and documented rationales mitigate this, inter-rater reliability should be measured formally. Third, diligence is constrained by data access, and private targets may be unable or unwilling to provide supplier-level spend or operational data at the required granularity. Fourth, the framework focuses on the supply side and does not explicitly measure customer concentration, technological obsolescence, cyber risk or climate-related exposure, each of which may be material in particular sectors. Fifth, the illustrative application is stylised and is not a substitute for empirical testing.

## Future Research

Future research could address these limitations in several ways. A retrospective study could apply the framework to a sample of firms using pre-2020 data and test whether BRI scores predicted performance during the pandemic, providing a direct test of Propositions 1 and 4. Panel data could be used to test the moderating effects described in Propositions 2 and 3. Sector-specific calibration studies could estimate optimal thresholds and weights. Finally, the framework could be extended with additional pillars, such as customer concentration, digital and cyber resilience, and environmental and social risk, building on evidence that sustainable practices support long-term resilience (Ortiz-de-Mandojana & Bansal, 2016).

## Conclusion

The disruptions of 2020 and 2021 demonstrated that business resilience cannot be inferred from financial statements alone. Firms fail or falter when external shocks pass through concentrated supply bases, are prolonged by brittle processes and are compounded by slow or poorly informed decisions. This paper has proposed the Integrated Resilience Due Diligence Framework, which brings together financial ratios, supplier concentration, process performance and governance quality into a single, structured assessment. Its distinctive features are a common normalisation method, a weighted Business Resilience Index, non-compensatory gating rules that respect the weakest-link nature of resilience, and a stress-testing module that converts operational vulnerability into financial consequences.

The illustrative application showed how the integrated view can overturn the conclusion of a financial-only review and how it supports concrete, costed remediation. For management consultants, the framework offers a replicable method that improves the quality and usefulness of diligence advice. For researchers, it provides a set of propositions that can be tested as data on post-pandemic firm performance becomes available. As supply chains, regulatory expectations and investor priorities continue to evolve, the integration of financial and operational evidence is likely to become a core expectation of due diligence rather than an optional enhancement.

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# Appendix A. Summary Data Request Checklist

**Table A1:** Core data requirements by pillar

| *Pillar* | *Data requested* | *Typical source* |
|---|---|---|
| Financial resilience | Three years of audited accounts; monthly management accounts; debt agreements and covenant certificates; cash flow forecast; facility headroom schedule | Finance function; lenders; auditors |
| Supplier concentration | Twenty-four months of accounts payable by supplier and group parent; bill of materials with approved sources; supplier country of origin; inventory by SKU with safety stock levels; key supply contracts | Procurement; ERP system; warehouse management |
| Process performance | Production logs and downtime records; OEE calculations at constraint; order delivery records with promised and actual dates; quality and rework logs; business continuity plans and recovery estimates | Operations; quality; customer service |
| Governance quality | Board and committee composition and minutes; risk register; internal audit reports; control deficiency logs; related-party transaction register; organisation chart and succession plans | Company secretary; internal audit; HR |