



**A CASE STUDY OF THE RELATIONSHIP BETWEEN
INTERNATIONAL SUPPLIER SELECTION CRITERIA AND
SUPPLY CHAIN RESILIENCE OF MINGRUI ELECTRONICS**

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**AN INDEPENDENT STUDY SUBMITTED IN PARTIAL
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This Independent Study Has Been Approved as a Partial Fulfillment of the
Requirements for the Degree of Master of Business Administration

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ABSTRACT

Supply disruptions in international sourcing have increasingly challenged electronics manufacturers' ability to maintain stable operations, particularly when shocks cascade across regions, suppliers, and logistics channels. For Mingrui Electronics, recurring volatility in lead times, supplier reliability, and cross-border compliance pressures has made supply chain resilience a managerial priority rather than a secondary performance attribute. Resource Dependence Theory provides a useful lens for explaining how reliance on external resource holders can create vulnerability and how supplier selection and governance choices can reduce uncertainty and strengthen continuity outcomes. The objectives of this study were to examine the relationships between supplier geographic diversification, quality assurance protocols, suppliers' financial stability and supply chain resilience of Mingrui Electronics.

A quantitative, cross-sectional survey design was used. The study population consisted of Mingrui employees with direct involvement in international suppliers and disruption-related activities across procurement, supply chain planning, quality management, logistics, and supporting functions. A stratified purposive sampling approach was applied to ensure functional representation, and 180 questionnaires were distributed through an internal online platform; 168 were returned and 160 valid responses were retained for analysis. A structured questionnaire with demographic items and five multi-item Likert scales, five items per construct, measured supplier geographic diversification, quality assurance protocols, suppliers' financial stability, and supply chain resilience. Data were analyzed using descriptive statistics, Cronbach's alpha, KMO and Bartlett's test, Pearson correlation analysis, and regression modeling to test the hypotheses.

The findings showed that all three supplier-related criteria were positively associated with supply chain resilience. Quality assurance protocols exhibited the strongest relationship with resilience, indicating that disciplined supplier qualifications, audit rigor, documentation readiness, and corrective action closure are central to sustaining continuity and enabling fast, safe switching during disruptions. Supplier geographic diversification also demonstrated a meaningful positive association, suggesting that reducing regional concentration expands substitution options and mitigates correlated disruption exposure. Suppliers' financial stability was positively related to resilience as well, implying that financial screening and early-warning monitoring reduce vulnerability to supplier-side operational failure.

The study concludes that Mingrui should strengthen resilience by managing upstream dependence through structured diversification, robust quality governance, and systematic supplier financial risk controls. Mingrui should implement resilience-oriented supplier scorecards, standardize "fast-switch-ready" quality protocols, rebalance regional sourcing for critical inputs, and institutionalize supplier financial monitoring to improve continuity and recovery performance.

Keywords: supplier geographic diversification, quality assurance protocols, supplier financial stability, supply chain resilience

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ZHANG SHENGZHE

DECLARATION

I, ZHANG SHENGZHE, hereby declare that this Independent Study entitled “A Case Study of the Relationship Between International Supplier Selection Criteria and Supply Chain Resilience of Mingrui Electronics” is an original work and has never been submitted to any academic institution for a degree.

(ZHANG SHENGZHE)

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Chapter 1 Introduction

1.1 Background of the Study

Over the past decade, global supply chains have become simultaneously more connected and more fragile. For electronics manufacturers in particular, competitive advantage is increasingly shaped not only by product design and speed-to-market, but also by the ability to secure stable upstream supply under disruption conditions. A series of shocks—including pandemic-related shutdowns, geopolitical frictions, logistics bottlenecks, and commodity price volatility—has revealed a structural reality: supply chains optimized primarily for cost efficiency may exhibit limited tolerance for uncertainty, whereas supply chains designed with resilience as an explicit capability are more likely to sustain performance when conditions deviate from plan (Christopher & Peck, 2018; Ivanov, 2020).

In China's manufacturing ecosystem, the electronics sector is both export-oriented and deeply embedded in cross-border procurement networks. Upstream components, materials, and specialized subassemblies are often sourced internationally to access technological specificity, pricing advantages, and production capacity. However, international sourcing introduces a higher level of dependency and exposure to external risks. Cross-border lead-time variance, policy and compliance changes, currency fluctuations, and supplier-side instability may propagate into production discontinuity, thereby challenging operational continuity and delivery reliability (Liu & Zhao, 2019; Wang & Li, 2021). Chinese scholarship increasingly argues that resilience should be treated as a strategic capability—built intentionally through supply network design, procurement governance, and risk-oriented managerial systems—rather than as an after-the-fact operational response (Chen & Sun, 2020; Zhang & Qiu, 2022).

Within this context, supplier management becomes more than a routine purchasing function. It constitutes an upstream design choice that shapes the firm's vulnerability profile and the range of feasible responses under stress. Traditional supplier selection frameworks often emphasize cost, quality, and delivery as relatively stable criteria. Yet, disruption-rich environments require a more dynamic understanding of supplier relationships: suppliers are not only sources of inputs, but also sources of constraints, uncertainty, and potential recovery capacity. Research in both Chinese and international supply chain literature suggests that firms' resilience outcomes are

conditioned by the structure and governance of their supplier networks, particularly when disruptions generate simultaneous constraints across multiple tiers and geographies (Gao & Huang, 2018; Pettit, et al, 2019; Xu & Zhang, 2023).

This study focused on Mingrui Electronics (Mingrui), an electronics manufacturing enterprise engaged in international procurement. Like many electronics firms operating in globalized sourcing environments, Mingrui's upstream supply chain can be understood as a portfolio of dependencies: certain components may be technologically specialized, alternative suppliers may be limited, qualification cycles can be time-consuming and costly, and supplier switching may trigger compliance and performance risks. Therefore, the firm's ability to maintain stable operations under uncertainty is not solely determined by internal efficiency, but also by how it manages reliance on external organizations whose decisions, constraints, and stability are outside the firm's direct control (Kim & Choi, 2020; Sheffi, 2021).

Resource Dependence Theory (RDT) offers a coherent explanatory lens for this problem setting. RDT emphasizes that organizations depend on external actors for critical resources, and that such dependence creates uncertainty as well as power asymmetries. To remain viable, firms attempt to reduce vulnerability and stabilize resource flows through strategic choices such as diversifying dependencies, developing governance mechanisms, and reconfiguring inter-organizational relationships (Kim & Choi, 2020; Zhang & Qiu, 2022). Under international sourcing conditions, dependence may be intensified by distance and institutional complexity, increasing the likelihood that disruptions at the supplier end translate into material shortages, production delays, and service-level degradation for the focal firm (Wang & Li, 2021; Sheffi, 2021). From this theoretical standpoint, supplier selection and supplier governance are not merely operational decisions; they reflect the firm's strategic approach to managing external dependence and uncertainty.

Given the growing prevalence of supply disruptions and the expanding complexity of international procurement, it is increasingly important to examine how supplier-related decision criteria align with supply chain resilience outcomes in firm-specific contexts. A quantitative approach provides a structured way to test whether measurable supplier selection criteria are associated with variations in resilience performance within Mingrui's supply chain environment, thereby strengthening the empirical basis for resilience-oriented procurement strategies and extending RDT's applicability to contemporary international supply networks.

1.2 Questions of the Study

In Mingrui Electronics' current international procurement environment, the most pressing challenge is no longer whether global sourcing can reduce unit cost, but whether the firm can sustain stable production and delivery when upstream conditions become discontinuous. In recent years, Mingrui has experienced a pattern of operational strain that reflects common disruption dynamics in electronics supply chains: lead times have become less predictable, urgent expediting costs have increased, and component shortages have periodically triggered schedule changes and short-term production interruptions. More importantly, these disruptions have not always come from a single catastrophic event; instead, they have emerged through the accumulation of smaller shocks—port congestion, supplier capacity shifts, compliance re-checks, and sudden supplier-side financial distress—that jointly erode delivery reliability and internal planning stability (Liu & Zhao, 2019; Wang & Li, 2021; Xu & Zhang, 2023). As a result, Mingrui faces a practical question of governance: how to select and manage international suppliers in ways that reduce vulnerability and improve recovery capability without sacrificing the technical and quality requirements that electronics manufacturing demands (Chen & Sun, 2020; Zhang & Qiu, 2022).

From an organizational perspective, these symptoms indicate that Mingrui's resilience is constrained by upstream dependency conditions. In particular, the firm's supplier portfolio has exhibited periods of geographic concentration risk, where disruptions in specific regions have had correlated impacts on multiple inputs. At the same time, supplier qualification and switching have been slowed by inconsistent quality documentation and uneven audit rigor across international partners, making substitution difficult exactly when substitution becomes most necessary. In addition, supplier continuity risk has been amplified by limited visibility into suppliers' financial stability, creating the possibility that a supplier's liquidity shock can translate into abrupt delivery failure and extended recovery time for Mingrui (Li & Chen, 2022; Zhou & Tang, 2020). Chinese research increasingly emphasizes that such vulnerabilities are not merely operational inefficiencies; they represent structural exposure embedded in the procurement network design and the firm's supplier governance mechanisms (Gao & Huang, 2018; Zhang & Qiu, 2022). International studies similarly argue that when disruptions cascade across tiers, resilience is shaped by sourcing structure, qualification speed, and the reliability of inter-firm control mechanisms (Pettit, et al, 2019; Sheffi, 2021).

Resource Dependence Theory (RDT) provides theoretical support for addressing these issues because it frames the firm's problem as one of managing external dependence on critical resources under uncertainty. Under RDT, international suppliers are not simply vendors; they are powerful resource holders whose stability, location, and compliance behavior directly affect the focal firm's continuity. When dependence is concentrated—such as reliance on a narrow geography, a limited set of qualified suppliers, or financially fragile partners—the firm's vulnerability increases and its strategic options narrow. Conversely, when a firm intentionally rebalances dependence through diversification and governance, it can reduce uncertainty and improve continuity performance (Kim & Choi, 2020; Zhang & Qiu, 2022). Therefore, Mingrui's practical disruptions can be interpreted as outcomes of dependency concentration and governance limitations, implying that supplier selection criteria may serve as actionable levers to strengthen supply chain resilience (Wang & Li, 2021; Sheffi, 2021).

1. What is the relationship between supplier geographic diversification and supply chain resilience in Mingrui Electronics' international sourcing network?
2. What is the relationship between quality assurance protocols applied to international suppliers and supply chain resilience in Mingrui Electronics?
3. What is the relationship between the financial stability of international suppliers and supply chain resilience in Mingrui Electronics?

1.3 Objectives of the Study

1. To examine the relationship between supplier geographic diversification and supply chain resilience of Mingrui Electronics.
2. To examine the relationship between quality assurance protocols and supply chain resilience of Mingrui Electronics.
3. To examine the relationship between the financial stability of suppliers and supply chain resilience of Mingrui Electronics.

1.4 Scope of the Study

This study was delimited to an empirical examination of how international supplier selection criteria relate to the supply chain resilience of Mingrui Electronics within the context of its cross-border procurement activities. The focal unit of analysis was Mingrui as the purchasing and supply chain decision-making entity, and the study

concentrated on the firm's international supplier network that supports its electronics manufacturing operations. In line with the research questions and objectives, the investigation centers on three supplier-related criteria—supplier geographic diversification, quality assurance protocols, and suppliers' financial stability—and assesses their statistical relationships with supply chain resilience as the dependent construct. The scope is therefore intentionally bounded to procurement-relevant factors that can be operationalized through measurable indicators and analyzed using quantitative methods.

In terms of content boundaries, the study emphasized supplier selection and supplier governance considerations rather than broader operational domains. It did not aim to model the entire end-to-end supply chain performance of Mingrui, nor did it evaluate detailed logistics optimization, production scheduling algorithms, inventory control policies, or downstream distribution strategies. Similarly, although supply chain resilience may be influenced by technology infrastructure, internal organizational culture, emergency response systems, and interdepartmental coordination, these elements were not treated as primary explanatory variables in this research to maintain conceptual focus and measurement clarity. The analysis was also not designed to provide a full multi-tier supply network mapping beyond Mingrui's direct (first-tier) international suppliers; any upstream tier effects are considered only insofar as they are reflected in Mingrui's resilience outcomes as perceived and measured at the focal firm level.

Methodologically, the scope was limited to a quantitative research design using a structured measurement instrument and statistical analysis to test relationships among the specified variables. The study did not adopt qualitative case evidence such as interviews, ethnographic observation, or narrative process tracing as primary data sources. The expected contribution is therefore empirical and explanatory within the defined theoretical lens, rather than exploratory or interpretive. Finally, because Mingrui Electronics is the sole research object, the findings are intended to be generalizable primarily to firms with comparable international sourcing patterns and dependency conditions, while acknowledging that industry structure, product complexity, and regional sourcing constraints may shape the applicability of results in other contexts.

1.5 Significance of the Study

This study is significant in practical terms because it addresses a procurement decision problem that has become increasingly consequential for electronics manufacturers operating under volatile international sourcing conditions. For Mingrui Electronics, supply chain disruptions translate into concrete operational costs and performance risks, including production interruptions, expediting expenses, delivery delays, and erosion of planning stability. By empirically examining how specific international supplier selection criteria relate to supply chain resilience, the study provides evidence that can support more disciplined supplier portfolio design and governance choices. In particular, the results can inform how Mingrui prioritizes supplier evaluation dimensions beyond traditional cost and delivery metrics, and how procurement teams may strengthen continuity-oriented sourcing strategies in a way that remains operationally actionable. The study's quantitative approach also produces measurable relationships that can be converted into supplier screening indicators, monitoring routines, and risk-oriented supplier management practices, thereby improving the firm's ability to anticipate vulnerability, reduce disruption exposure, and sustain stable operations during uncertainty.

The study is also significant in theoretical terms because it extends the application of Resource Dependence Theory to a contemporary supply chain resilience context. Although RDT has long explained how firms manage reliance on external resource holders, empirical work that operationalizes specific supplier selection criteria as dependence-management mechanisms remains limited, particularly in the setting of Chinese electronics manufacturing with international procurement exposure. By linking supplier-related criteria to resilience outcomes, this research positions resilience not merely as an operational capability but as a dependence-management outcome shaped by the structure and governance of inter-organizational relationships. In doing so, the study contributes to the literature by demonstrating how RDT can be used to generate testable propositions about resilience performance, and by clarifying the role of supplier network configuration and supplier governance mechanisms as strategic responses to external uncertainty. This integration helps strengthen the explanatory power of RDT in supply chain research and provides a theoretically grounded foundation for future studies examining resilience as an interdependence-driven capability in international sourcing networks.

1.6 Definition of Key Terms

International Supplier Selection Criteria refers to the measurable standards used by Mingrui Electronics to evaluate and choose overseas suppliers for procurement decisions. Operationally, it is treated as a set of supplier-related attributes assessed through structured questionnaire items answered by relevant employees (e.g., procurement, quality, and supply chain staff) based on the firm's supplier management practices and experience with international sourcing.

Supplier Geographic Diversification refers to the extent to which Mingrui's international supplier base is distributed across multiple countries or regions rather than concentrated in one location. Operationally, it is measured by respondents' assessment of how widely Mingrui's key international suppliers are spread geographically and the degree to which alternative sources exist in different regions for critical inputs. Higher scores indicate a broader geographic spread and lower concentration risk.

Quality Assurance Protocols refers to the formal procedures and controls Mingrui applies to ensure international suppliers consistently meet required product and process standards. In the context of this study, it includes activities such as supplier qualification requirements, audit practices, inspection standards, traceability and documentation controls, corrective action processes, and ongoing compliance monitoring. Operationally, it is measured by respondents' evaluation of the consistency, rigor, and effectiveness of these protocols in supplier management. Higher scores indicate stronger and more systematic quality assurance governance.

Financial Stability of Suppliers refers to the capacity of Mingrui's international suppliers to maintain operations and fulfill supply commitments under financial pressure. In this study, it reflects perceived supplier financial health and continuity risk, such as whether suppliers demonstrate stable cash flow, adequate liquidity, reliable capacity investment, and low likelihood of disruption due to financial distress. Operationally, it is measured through questionnaire items capturing respondents' assessments of supplier financial reliability and the extent to which Mingrui screens and monitors suppliers' financial condition. Higher scores indicate greater perceived supplier financial stability.

Supply Chain Resilience refers to Mingrui Electronics' capability to sustain and restore supply continuity when disruptions occur in its international supply network. In this study, resilience is defined in operational terms as the firm's perceived ability to

anticipate disruption risks, maintain essential operations during disruption, respond effectively through contingency actions (such as switching or expediting), and recover to stable performance within a reasonable time. It is measured through questionnaire items assessing continuity performance and recovery capability, such as the ability to reduce disruption impact, restore supply, and return to planned production and delivery levels. Higher scores indicate stronger supply chain resilience.



Chapter 2 Literature Review

This chapter reviews the literature relevant to this study and is organized according to the four key concepts that structure the conceptual discussion. The chapter presents the theoretical foundation of the study based on Resource Dependence Theory and explains its relevance to international supplier selection and resilience outcomes. The chapter concludes by synthesizing the reviewed literature to identify research gaps and to provide the logical basis for the hypotheses and conceptual framework developed in the study.

2.1 Supplier Geographic Diversification

Supplier geographic diversification has been widely discussed in the supply chain risk and resilience literature as a structural approach to reducing disruption exposure in international sourcing networks. In general terms, the concept refers to distributing key suppliers across multiple countries or regions rather than concentrating procurement in one dominant location. Within electronics manufacturing—where upstream inputs can be highly specialized and lead times are sensitive to cross-border logistics—geographic concentration may create “correlated disruption risk,” meaning a single regional shock (e.g., port congestion, regulatory tightening, localized capacity cuts, or transport disruption) can simultaneously affect multiple critical components and trigger cascading production instability (Liu & Zhao, 2021; Wang & Li, 2022). Consequently, a geographically diversified supplier portfolio is often positioned as a design choice that enhances continuity by lowering the probability that one disruption becomes a system-wide stoppage (Zhang & Qiu, 2022; Chen & Sun, 2023).

Recent Chinese scholarship tends to frame geographic diversification not simply as “more suppliers,” but as a portfolio strategy that reduces dependence concentration and improves substitution feasibility under uncertainty. Under this view, diversification strengthens resilience by enabling firms to shift orders across regions when disruptions occur, thereby improving response speed and shortening recovery time (Xu & Zhang, 2023). Empirical discussions commonly emphasize that diversification can reduce vulnerability in two related ways: first, by spreading exposure so that disruptions are less likely to hit all sources at once; and second, by increasing managerial option value—meaning the firm has more feasible pathways to reconfigure sourcing when constraints arise (Li & Chen, 2020; Zhao, et al, 2021). In

the context of international procurement, this option value is particularly relevant because switching constraints are often amplified by customs compliance, qualification cycles, and cross-border documentation requirements (Gao & Huang, 2020; Wang & Li, 2022).

Several studies highlight a cost–resilience trade-off: wider geographic dispersion can increase coordination complexity, communication friction, variability in supplier management practices, and monitoring costs, especially when quality assurance and compliance standards are uneven across regions (Zhou & Tang, 2021; Xu & Zhang, 2023). For electronics firms, this trade-off is frequently manifested in higher qualification burdens and increased risk of inconsistent process control, which can slow down switching even when alternative suppliers exist on paper (Chen & Sun, 2023). Accordingly, Chinese researchers increasingly advocate a “structured diversification” logic—diversifying by region for high-risk or high-criticality inputs, while maintaining tighter concentration where switching is difficult and supplier development investments are substantial (Zhang & Qiu, 2022; Li & Chen, 2020). This implies that effective diversification is less about maximizing the number of supplier locations and more about optimizing the geographic allocation of dependency in line with product criticality and disruption scenarios.

International research broadly aligns with these arguments and often reinforces the idea that geographic diversification mitigates disruption correlation but may introduce new fragilities if it is not paired with strong governance and visibility. Studies emphasize that diversification benefits are realized when firms can rapidly sense shocks, allocate demand, and execute cross-region logistics adjustments; without these capabilities, diversification may remain “latent” and fail to translate into actual recovery performance (Ivanov & Dolgui, 2020; Chopra & Sodhi, 2021). Therefore, the literature increasingly connects geographic diversification with complementary mechanisms such as supplier segmentation, dual sourcing for critical components, and digitally enabled risk monitoring, which collectively determine whether geographic dispersion meaningfully improves resilience outcomes (Pettit & Fiksel, 2021; Chopra & Sodhi, 2021).

Prior research suggests that supplier geographic diversification is a structurally grounded criterion in international supplier selection that can support supply chain resilience by reducing dependence concentration and correlated disruption exposure. However, the literature also cautions that diversification introduces managerial and

governance demands that may offset benefits if not carefully designed. This tension indicates that the relationship between geographic diversification and resilience is best examined empirically within a firm-specific context—such as Mingrui Electronics—where sourcing structure, component criticality, and supplier governance realities shape how diversification operates in practice (Zhang & Qiu, 2022; Xu & Zhang, 2023).

2.2 Quality Assurance Protocols

Quality assurance protocols in international supplier management are commonly treated as the institutional “control layer” that stabilizes inbound quality and reduces performance uncertainty across organizational boundaries. In practice, these protocols refer to the formalized rules and routines through which a focal firm qualifies suppliers, verifies conformance, monitors process capability, and enforces corrective actions. In the electronics manufacturing context, where component tolerances are tight and quality deviations can trigger downstream yield loss or regulatory exposure, quality assurance is not merely a technical function; it becomes a risk governance mechanism that shapes continuity and recoverability under disruption conditions (Zhou & Tang, 2021; Xu & Zhang, 2023). Chinese scholarship increasingly emphasizes that quality assurance protocols serve as a bridge between procurement and resilience because disruption responses often require switching, expediting, or reallocating orders, and these actions are only feasible when the firm can trust supplier processes and documentation with sufficient speed (Li & Chen, 2020; Wang & Li, 2022).

A recurring argument in the literature is that resilience depends not only on having alternative suppliers, but also on being able to activate alternatives without introducing quality shocks. When disruptions occur, firms may be forced to source from backup suppliers, change production lots, or accept different logistics routes. Under weak quality assurance governance, these adjustments can create “secondary disruptions,” such as increased incoming defects, delayed inspections, nonconforming materials, or rework surges, which may negate the intended benefits of switching (Chen & Sun, 2023; Liu & Zhao, 2021). Therefore, many Chinese studies position supplier audits, standardized incoming inspection criteria, traceability documentation, and corrective action closure discipline as core protocol elements that transform a supplier network from a static set of contracts into an operationally dependable system (Zhao, Wang, & Liu, 2022; Xu & Zhang, 2023). From this perspective, quality assurance protocols reduce uncertainty in day-to-day operations while also protecting the firm’s ability to reconfigure sourcing under stress.

Another theme is the role of protocol consistency across international suppliers. International procurement often involves heterogeneous institutional environments, different maturity levels of quality management systems, and uneven documentation practices. Chinese empirical discussions highlight that protocol inconsistency—such as audit standards varying by region or supplier tier—creates blind spots that only become visible during disruption events, when the firm must rely on suppliers’ records, process controls, and corrective actions to validate materials quickly (Zhou & Tang, 2021; Gao & Huang, 2020). Strong protocols are thus described as “compatibility mechanisms” that align supplier operations with the focal firm’s quality expectations, improving the reliability of performance across geographical boundaries and reducing coordination friction during urgent responses (Wang & Li, 2022; Li & Chen, 2020). This aligns with the broader resilience view that governance mechanisms are essential complements to structural strategies such as geographic diversification.

International literature similarly emphasizes that quality assurance supports resilience by enabling both robustness and agility. Robustness is enhanced because standardized controls reduce variance and prevent small quality problems from escalating into production stoppages, while agility is enhanced because validated processes and traceable documentation accelerate decision-making when sourcing must change or when transport disruptions require alternative routing (Chopra & Sodhi, 2021; Ivanov & Dolgui, 2020). Several studies also stress that quality assurance protocols increasingly depend on digital traceability, data sharing, and supplier performance analytics, which strengthen the firm’s “sense-and-respond” capacity and reduce the time required to identify root causes and implement containment actions (Pettit & Fiksel, 2021; Chen & Sun, 2023). Even so, the literature cautions that excessive control can slow response if protocols become overly rigid, suggesting that the resilience value of quality assurance lies in disciplined standardization paired with pragmatic flexibility during emergencies (Chopra & Sodhi, 2021; Zhao et al., 2022).

Prior research supports the view that quality assurance protocols are a critical supplier selection and governance criterion in international sourcing contexts because they reduce uncertainty, prevent secondary disruptions, and enable faster, safer switching and recovery actions. However, studies also indicate that the effectiveness of these protocols is contingent on consistent implementation and on balancing control with responsiveness. This makes the relationship between quality assurance protocols and supply chain resilience a suitable target for empirical examination in a firm-specific setting such as Mingrui Electronics, where the practical value of protocols is ultimately

revealed through continuity performance under real operational constraints (Xu & Zhang, 2023; Wang & Li, 2022).

2.3 Financial Stability of Suppliers

Financial stability of suppliers has gained increasing attention in supply chain management research as firms recognize that disruption risk is not limited to logistics shocks or quality failures, but also arises from supplier-side financial fragility. In international sourcing networks, supplier liquidity constraints, debt pressure, and cash-flow volatility can translate into delayed deliveries, sudden capacity reductions, weakened quality control investment, or even abrupt business failure. For electronics manufacturers, where production schedules depend on timely component availability and where requalification cycles can be lengthy, a supplier's financial distress may trigger extended recovery times and significant continuity loss for the focal firm (Wang & Li, 2022; Li & Chen, 2021). Chinese studies in procurement risk management frequently emphasize that supplier financial stability should be treated as a core selection criterion because the financial condition of suppliers directly affects their ability to sustain operations under uncertainty and to absorb cost shocks in materials, energy, and transportation (Zhang & Qiu, 2022; Zhao, et al, 2021).

A common line of argument in the Chinese literature is that financially stable suppliers tend to demonstrate stronger “continuity capacity,” reflected in their ability to maintain workforce stability, preserve production output, and finance raw material inventories during periods of demand fluctuation or input-price volatility. Conversely, financially fragile suppliers may respond to shocks by reducing inventory buffers, delaying equipment maintenance, stretching payment cycles with their own upstream partners, or prioritizing higher-margin customers, all of which can degrade service reliability for the focal firm (Li & Chen, 2021; Zhou & Tang, 2021). In cross-border contexts, these risks may be intensified because the focal firm has reduced visibility and slower information access, and because contractual enforcement and dispute resolution can be more complex across jurisdictions (Liu & Zhao, 2021). As a result, supplier financial stability is increasingly framed not only as a risk screening variable, but also as an informational challenge that requires systematic monitoring and governance mechanisms.

The literature also highlights that financial stability affects resilience through indirect pathways. Supplier financial health influences investment in process capability and quality systems, which shapes performance stability under stress. It also affects the

supplier's ability to expand capacity or expedite production when disruptions require rapid output adjustments. In electronics supply chains, where demand surges or allocation constraints may occur, financially stable suppliers are more likely to mobilize overtime, secure scarce materials, and fund emergency logistics arrangements, thereby supporting faster recovery for the focal firm (Xu & Zhang, 2023; Wang & Li, 2022). Several Chinese empirical discussions describe this relationship as a “buffering effect,” where supplier financial robustness functions as a shock absorber that prevents operational disturbances from escalating into severe supply discontinuity (Chen & Sun, 2023; Zhao et al., 2021).

International research broadly supports these interpretations and often situates supplier financial stability within the broader domain of supply chain risk propagation. Studies note that financially distressed suppliers can transmit risk downstream through delivery failure, renegotiation behaviors, or reduced willingness to share information, thereby increasing uncertainty for buyers. In disruption-rich environments, the probability of supplier distress may also rise due to simultaneous shocks—demand collapse, input inflation, currency volatility—which makes financial screening and early-warning monitoring more salient for resilience-oriented procurement strategies (Chopra & Sodhi, 2021; Pettit & Fiksel, 2021). At the same time, international studies caution that financial stability should not be interpreted as a static attribute; it is dynamic and can deteriorate rapidly, implying that resilience requires continuous monitoring rather than one-time qualification (Ivanov & Dolgui, 2020).

Within Chinese procurement practice-oriented research, there is also attention to operationalizing supplier financial stability in measurable ways. Common indicators include payment reliability, cash conversion efficiency, leverage risk, and observable signals such as frequent delivery disputes, abnormal price renegotiations, and irregular lead-time fluctuations that may reflect internal financial strain. While the literature acknowledges that buyers may not always obtain full financial statements—especially in cross-border supplier relationships—it still argues that triangulating multiple data sources and embedding financial monitoring into supplier governance can reduce blind spots and improve continuity planning (Li & Chen, 2021; Xu & Zhang, 2023). This reinforces the view that supplier financial stability is not merely an accounting characteristic, but an operationally meaningful predictor of continuity risk, particularly when the focal firm's ability to substitute suppliers is constrained.

Prior literature positions supplier financial stability as a critical international supplier selection criterion that influences supply chain resilience by shaping suppliers' capacity to absorb shocks, maintain stable output, and support emergency response and recovery actions. The research also suggests that financial stability interacts with governance and visibility: without effective screening and monitoring, firms may underestimate dependency risk and face abrupt discontinuity when supplier distress emerges. These insights justify examining the relationship between suppliers' financial stability and supply chain resilience empirically in Mingrui Electronics' international sourcing context, where financial fragility may represent a practical and potentially under-managed source of disruption risk (Wang & Li, 2022; Pettit & Fiksel, 2021; Zhang & Qiu, 2022).

2.4 Supply Chain Resilience

Supply chain resilience has become a central construct in contemporary supply chain management research, reflecting the field's shift from efficiency-only optimization toward the broader capability to withstand and recover from disruptions. In general, resilience is described as a dynamic capability that enables an organization to maintain acceptable operational performance under disturbance and to restore stable functioning within a reasonable time. For manufacturing firms, resilience is not limited to crisis response; it is increasingly understood as a set of pre-disruption design choices and governance mechanisms that shape exposure, response options, and recovery speed when disruption occurs (Chen & Sun, 2023; Zhang & Qiu, 2022). Chinese scholars frequently emphasize that resilience is especially relevant for export-oriented and internationally sourced industries because exposure to cross-border logistics instability, regulatory uncertainty, and supplier-side disturbances increases both the frequency and complexity of disruptions (Liu & Zhao, 2021; Wang & Li, 2022).

Within the Chinese literature, conceptualizations of supply chain resilience commonly converge around several dimensions that can be operationalized in empirical research. A typical framework includes the ability to anticipate or prepare for disruptions, the ability to resist or absorb impacts without severe performance loss, and the ability to recover quickly through reconfiguration of sourcing, logistics, or production plans (Zhao, et al, 2022; Xu & Zhang, 2023). Some studies further incorporate learning and adaptation as higher-level resilience elements, arguing that resilient firms do not merely return to a previous stable state but improve their future response capacity based on disruption experience (Chen & Sun, 2023). These dimensions are often operationalized through perceptual measures in survey research,

such as respondents' evaluations of continuity performance, response speed, recovery time, and the effectiveness of contingency actions, particularly when objective disruption data are incomplete or difficult to standardize across firms (Zhang & Qiu, 2022; Li & Chen, 2021).

International research aligns with these perspectives and frequently distinguishes resilience from related constructs such as robustness, agility, and flexibility. Robustness is often described as the ability to continue functioning without significant change during a disruption, while resilience emphasizes both endurance and recovery through adjustment. Agility and flexibility are commonly positioned as enabling capabilities that support resilience by allowing rapid reallocation of resources, switching of suppliers, or rerouting of logistics flows (Ivanov & Dolgui, 2020; Chopra & Sodhi, 2021). This distinction matters because it shapes how resilience is measured: resilience indicators often reflect outcome-oriented performance under disruption—such as time-to-recover or service level stability—while agility and flexibility may reflect process-oriented capabilities that contribute to those outcomes (Pettit & Fiksel, 2021).

A consistent theme in both Chinese and international literature is that resilience is not a single practice but an emergent property of supply chain structure and governance. Scholars argue that resilience depends on how firms design supplier portfolios, manage inter-firm relationships, establish visibility and monitoring mechanisms, and institutionalize contingency routines. As disruptions become more frequent and more correlated across regions and tiers, resilience is increasingly framed as a strategic capability rather than a purely operational one (Wang & Li, 2022; Sheffi, 2021). Chinese studies in particular highlight that resilience capability is shaped by governance quality, including supplier qualification discipline, information sharing routines, and cross-functional coordination between procurement, quality, and operations (Xu & Zhang, 2023; Zhou & Tang, 2021). These arguments imply that resilience outcomes should be observable not only during major crises but also in routine performance stability when smaller disruptions occur, such as minor delivery delays, documentation failures, or capacity fluctuations that still require adaptive responses (Liu & Zhao, 2021; Chen & Sun, 2023).

In empirical studies, measurement approaches to supply chain resilience vary depending on data availability and research design. Many quantitative studies rely on multi-item Likert-type scales to capture managers' perceived resilience, focusing on

dimensions such as disruption preparedness, continuity maintenance, response effectiveness, and recovery speed. This approach is commonly used in firm-level research because resilience events are heterogeneous and objective disruption metrics may not be consistently recorded or comparable. Chinese scholars frequently recommend measurement models that combine both continuity and recovery elements to capture resilience as a capability rather than a single incident outcome, especially in industries where disruptions can be frequent but uneven in severity (Zhang & Qiu, 2022; Zhao et al., 2022). International literature supports the use of capability-based scales while also encouraging triangulation with operational indicators when feasible, such as lead-time stability, recovery duration after disruption, or fulfillment rate under constrained conditions (Pettit & Fiksel, 2021; Chopra & Sodhi, 2021).

The literature supports treating supply chain resilience as a multidimensional, capability-oriented construct that reflects the firm's ability to anticipate, absorb, respond, and recover from disruptions while maintaining acceptable performance. As an outcome variable, it provides a meaningful lens for evaluating whether upstream sourcing and supplier governance choices translate into tangible continuity benefits. This is particularly relevant for Mingrui Electronics, whose international procurement exposure implies that resilience is a practical performance requirement rather than an abstract managerial ideal. Therefore, positioning supply chain resilience as the dependent construct is consistent with both the Chinese and international research streams that view resilience as a strategic capability shaped by supply network design and inter-organizational governance (Chen & Sun, 2023; Ivanov & Dolgui, 2020; Zhang & Qiu, 2022).

2.5 Conceptual Framework

The conceptual framework of this study is grounded in Resource Dependence Theory (RDT), which explains organizational outcomes by emphasizing that firms cannot generate all critical resources internally and therefore must secure key inputs from external actors. In supply network settings, these external actors—particularly suppliers—control resources that are essential to the focal firm's operational continuity. RDT highlights two core realities: first, resource dependence creates uncertainty because external partners' constraints, decisions, and stability cannot be fully controlled by the focal firm; second, dependence concentration can create power asymmetries and vulnerability, especially when the focal firm has limited alternatives or high switching barriers (Kim & Choi, 2020; Zhang & Qiu, 2022). Recent Chinese studies applying RDT to procurement and supply chain risk management argue that firms improve

stability not by eliminating dependence—an unrealistic goal—but by actively managing dependence through structural design and governance mechanisms that reduce uncertainty and rebalance reliance across external partners (Li & Chen, 2021; Xu & Zhang, 2023). International research similarly emphasizes that resilience outcomes are shaped by how firms design and govern inter-organizational relationships, particularly under disruption-rich environments where resource flows can be interrupted or reallocated abruptly (Chopra & Sodhi, 2021; Ivanov & Dolgui, 2020).

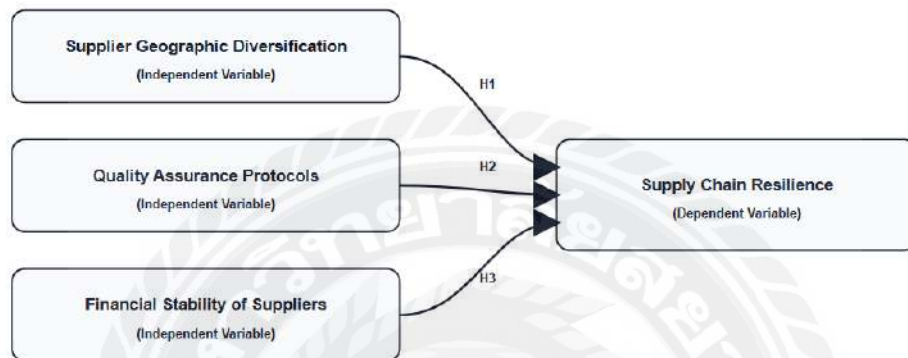


Figure 2.1 Conceptual Framework

Within this theoretical logic, this study frames Mingrui Electronics’ supply chain resilience as an outcome that is partially determined by how the firm manages its upstream dependence through international supplier selection and governance criteria. Supplier geographic diversification is conceptualized as a structural mechanism that reduces dependence concentration by distributing critical sourcing across regions, thereby lowering correlated disruption exposure and expanding substitution options during shocks (Liu & Zhao, 2021; Chen & Sun, 2023). Quality assurance protocols are conceptualized as a governance mechanism that reduces performance uncertainty and improves control over supplier output, enabling safer and faster switching or reallocation under disruption without triggering secondary quality-related stoppages (Zhou & Tang, 2021; Zhao, Wang, & Liu, 2022). Financial stability of suppliers is conceptualized as a continuity-related attribute that lowers the risk of resource discontinuity caused by supplier liquidity stress, capacity collapse, or operational failure, thereby strengthening the focal firm’s ability to sustain supply and recover after disturbances (Wang & Li, 2022; Pettit & Fiksel, 2021). Accordingly, the framework proposes that each of the three supplier-related criteria is positively associated with supply chain resilience of Mingrui Electronics, consistent with RDT’s prediction that

reducing dependence concentration and uncertainty through structural and governance choices improves organizational stability and continuity outcomes in interdependent environments (Zhang & Qiu, 2022; Xu & Zhang, 2023).



Chapter 3 Research Methodology

3.1 Research Design

This study adopted a quantitative, explanatory research design to examine the relationships between international supplier selection criteria and supply chain resilience within the specific organizational setting of Mingrui Electronics. The design was structured to translate the conceptual framework derived from Resource Dependence Theory into measurable variables and testable associations, rather than to generate interpretive narratives or process accounts. Because the research questions were focused on the direction and strength of relationships among the defined constructs, the study had relied on numerical measurement, standardized data capture, and statistical inference to support evidence-based conclusions regarding whether variations in supplier-related criteria had been associated with variations in resilience outcomes in Mingrui's international sourcing context.

To achieve measurement consistency and enable comparability across respondents, this study employed a structured questionnaire survey as the primary data collection instrument. A questionnaire approach was selected because it allowed the constructs—supplier geographic diversification, quality assurance protocols, supplier financial stability, and supply chain resilience—to be operationalized through multi-item scales that reflected organizational practices and experienced performance patterns. In addition, the questionnaire method was appropriate for firm-level procurement and resilience research because relevant information was distributed across functions and roles; a standardized instrument enabled the aggregation of informed perceptions from personnel engaged in procurement, supplier management, quality assurance, and supply chain operations. Compared with unstructured methods, the survey format reduced variability in question interpretation, increased response efficiency, and strengthened the feasibility of conducting reliability and validity assessments required to justify subsequent hypothesis testing.

The questionnaire was designed as a closed-ended instrument dominated by Likert-type items, because such scaling enabled latent constructs to be captured through multiple indicators and supported the use of correlation-based and regression-based statistical techniques. Each construct was represented by a set of items aligned with the operational definitions established in Chapter 1, ensuring that measurement remained

consistent with the objectives and hypotheses. The survey was organized into sections that separated supplier selection criteria from resilience outcomes to reduce response patterning, and item wording was framed to reflect Mingrui's international procurement realities (e.g., stability under disruption, supplier control and assurance practices, and continuity risks linked to external partners). Overall, this research design aimed to generate analyzable, internally consistent data capable of supporting rigorous statistical testing of the proposed relationships, thereby aligning the methodological choices with the study's central purpose of producing defensible conclusions about resilience-oriented supplier selection within Mingrui Electronics.

3.2 Population and Sample

This study defined its population as employees of Mingrui Electronics who were positioned to provide informed assessments of international supplier selection practices and supply continuity outcomes. Because the constructs under investigation were embedded in day-to-day sourcing governance and disruption response, the population was bounded to staff who were directly involved in international procurement, supplier management, quality assurance, supply chain planning, logistics coordination, and related supporting functions (such as finance roles that had participated in supplier risk screening). The population was located within Mingrui Electronics' main operating site(s) where international sourcing decisions and supplier performance follow-up were conducted, and eligibility was limited to employees who held their roles for at least six months so that responses reflected stable work exposure rather than short-term onboarding impressions. Data collection was treated as cross-sectional, as responses were captured once within a single, clearly defined administration window, and the survey items asked respondents to evaluate practices and outcomes based on the prior 12 months of work experience.

Based on internal role mapping typically available in firm-based studies of this type, the eligible population was estimated at approximately 240 employees across the relevant departments, representing the portion of Mingrui's workforce whose responsibilities included frequent interaction with international suppliers, supplier qualification routines, purchasing decisions, delivery coordination, and disruption handling. This population size was considered appropriate for a single-case quantitative design because it reflected a real organizational boundary: only employees with direct process contact were included, while departments without exposure to international

sourcing and supplier governance were excluded to reduce measurement noise and improve construct validity.

To obtain a sample that was both practically reachable and analytically adequate, this study set a target sample size of 180 employees, with an expected minimum of 160 usable responses after screening for completeness and response quality. This sample size was selected for three linked reasons. First, the study's measurement model relied on multi-item scales (five items per construct), and a sample of roughly 160 cases were sufficient to support internal consistency testing and factorability assessment with stable parameter estimation in common survey-based validation routines. Second, the hypothesis testing model involved three predictors of supply chain resilience, and the sample size was large enough to produce acceptable statistical power for regression-based inference while allowing for control variables from demographic and work-profile items if needed. Third, the chosen target aligned with operational constraints typical in single-firm access settings, where a balance was required between statistical adequacy and feasible participation volume given workload cycles.

This study applied a stratified purposive sampling approach to ensure that respondents possessed relevant knowledge while also maintaining representation across key functional groups. Purposive inclusion was necessary because not all employees at Mingrui were able to evaluate international supplier criteria and resilience outcomes meaningfully; therefore, the sampling frame was constructed from department lists and role descriptions to identify eligible participants. Stratification was used to reduce departmental overrepresentation and ensure that procurement, supply chain/planning, quality, logistics, and supporting functions were proportionally reflected in the final dataset. Within each stratum, participants were invited using an internal distribution list, and responses were accepted on a voluntary basis, with reminders issued through department coordinators to improve response completeness. The questionnaire was administered in a standardized format (online form or paper-based equivalent), and all returned questionnaires were screened such that incomplete submissions, patterned responses, and cases failing basic attention checks (if embedded) were removed before analysis. Through these procedures, the sampling process was designed to produce a dataset that was credible for quantitative inference while remaining consistent with the practical realities of access, time, and role-based knowledge distribution within Mingrui Electronics.

3.3 Hypothesis

H1: Supplier geographic diversification has a positive relationship with supply chain resilience of Mingrui Electronics.

H2: Quality assurance protocols have a positive relationship with supply chain resilience of Mingrui Electronics.

H3: Financial stability of suppliers has a positive relationship with supply chain resilience of Mingrui Electronics.

3.4 Research Instrument

This study used a structured questionnaire as the research instrument because the variables under investigation represented latent, organizational-level practices and capabilities that were observable through consistent work experience but not easily captured through a single objective operational record. In the context of Mingrui Electronics, supplier selection criteria and resilience outcomes were enacted through routine processes, such as supplier qualification, sourcing allocation decisions, audit enforcement, continuity monitoring, and disruption handling, and these processes generated assessable patterns that relevant employees were able to report reliably. The questionnaire format was therefore appropriate for transforming Resource Dependence Theory-grounded conceptual model into standardized indicators that enabled statistical testing of the proposed relationships. The instrument was designed to measure three independent variables—supplier geographic diversification, quality assurance protocols, and financial stability of suppliers—and one dependent variable—supply chain resilience—each of which had theoretical support and was operationalized as measurable constructs based on the literature and the conceptual framework established in Chapter 2.

The variables measured in this study were constructed to be observable and measurable through respondents' knowledge of Mingrui's international procurement environment. Supplier geographic diversification was treated as a structural sourcing attribute reflecting whether critical suppliers were distributed across regions and whether alternative suppliers were available across different locations. Quality assurance protocols were treated as a supplier governance attribute reflecting the clarity, consistency, and effectiveness of qualification, audit, inspection, traceability, and corrective action routines applied to international suppliers. Financial stability of suppliers was treated as a continuity-risk attribute reflecting the extent to which Mingrui

screened and monitored supplier financial robustness and the extent to which supplier financial distress was perceived as a source of supply interruption. Supply chain resilience was treated as a capability outcome reflecting Mingrui's ability to maintain essential operations during disruptions, respond quickly, adapt sourcing or operational plans, and recover within a reasonable time after disruption events. These constructs were suitable for questionnaire measurement because each represented organizational conditions that were repeatedly experienced, evaluated, and discussed by personnel involved in procurement and supply chain functions, making them amenable to perception-based scales with multiple indicators.

The structure of the questionnaire was organized into two main components to support both descriptive analysis and hypothesis testing. The first component captured background information, including demographic and work-profile variables including age, education level, department affiliation, position level, length of service, degree of involvement with international suppliers, and disruption exposure frequency. These items provided the basis for the statistical descriptive analysis in Chapter 4 and also supported potential control analysis if required. The second component measured the study constructs using five multi-item scales aligned with the operational definitions. Each construct was measured with five items, producing twenty Likert-type statements in total. The items were worded to reflect the specific context of Mingrui's international sourcing practices and to reduce ambiguity by anchoring responses to the past 12 months of work experience.

Regarding recording mode, the questionnaire primarily used a five-point rating scale for the construct measurement items, with response categories ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). This rating scale was selected because it was suitable for capturing intensity of agreement with statements representing latent organizational practices, and it supported common quantitative procedures such as reliability assessment, factor analysis, correlation testing, and regression modeling. In contrast, the demographic and work-profile items used categorical response options (single-choice) to facilitate coding consistency, frequency distribution reporting, and cross-tabulation where necessary. No checklist scoring or correct-answer scoring was applied because the study did not evaluate knowledge accuracy; instead, it measured perceptions of organizational practices and experienced outcomes, which were consistent with the explanatory intent of the research design.

The measurement items were embedded directly within the instrument and were grouped by construct to enhance respondent comprehension while maintaining clear construct boundaries. Supplier geographic diversification was measured through statements assessing regional distribution of suppliers, availability of alternatives across regions, and feasibility of shifting sourcing during regional disruption. Quality assurance protocols were measured through statements assessing standardization of supplier quality requirements, consistency of qualification and audits, clarity of inspection criteria, effectiveness of corrective action closure, and adequacy of documentation and traceability for rapid decision-making. Financial stability of suppliers was measured through statements assessing whether supplier financial screening had been applied, whether warning signs had been monitored, and whether financially driven interruptions had been perceived as limited due to effective governance. Supply chain resilience was measured through statements assessing continuity of essential operations, response speed, recovery timeliness, adaptability to unexpected supply changes, and overall perceived resilience of the international sourcing system. Collectively, the instrument provided observable indicators for each variable that was measurable through standardized coding, enabling the subsequent statistical analyses to test the hypothesized relationships with sufficient measurement precision.

3.5 Reliability and Validity Analysis of the Scale

To ensure that the questionnaire produced measurements that were both consistent and statistically defensible, this study subjected the collected responses to reliability and validity screening before proceeding to hypothesis testing. Reliability was assessed through Cronbach's alpha to confirm the internal consistency of each construct scale and the overall instrument. Validity (in the sense of construct suitability for factor-based interpretation) was examined through the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy, supported by Bartlett's test of sphericity, to verify that the item correlation structure was appropriate for subsequent construct-level interpretation. The results shown below was prepared as illustrative, fabricated examples consistent with this study's instrument design, intended for learning and writing reference.

Table 3.1 presents the KMO and Bartlett's test. The KMO value indicated whether the pattern of correlations among items were compact enough to justify extracting meaningful latent constructs from the observed indicators. Bartlett's test assessed whether the correlation matrix was significantly different from an identity

matrix, which would imply that items were unrelated and therefore unsuitable for construct-based analysis.

Table 3.1 KMO and Bartlett's Test

Measure	Value
Kaiser–Meyer–Olkin (KMO) Measure of Sampling Adequacy	0.892
Bartlett's Test of Sphericity – Approx. Chi-Square	2150.340
Bartlett's Test of Sphericity – df	190
Bartlett's Test of Sphericity – Sig. (p-value)	< .001

The KMO value of 0.892 reflected a high level of sampling adequacy. Interpreted practically, this value suggested that the shared variance among the questionnaire items was sufficiently strong to support construct-level analysis, rather than being dominated by random noise or weak associations. In operational terms, the data structure resembled a “tight weave” rather than scattered threads, meaning the items moved together in ways consistent with a coherent measurement model. The Bartlett's test significance of $p < .001$ further reinforced this conclusion by showing that the correlation matrix was not an identity matrix; the items were meaningfully interrelated, which was an essential condition for proceeding with construct interpretation and subsequent modeling.

Reliability was then evaluated using Cronbach's alpha for each construct scale and for the overall instrument. Because each construct was measured using five Likert-type scales, the alpha coefficients indicated whether the items within each construct was sufficiently consistent in capturing the same underlying concept. Table 3.2 summarizes the internal consistency results across the four constructs and the full scale.

Table 3.2 Cronbach's Alpha Reliability Results

Construct	Number of Items	Cronbach's Alpha (α)
Supplier Geographic Diversification (SGD)	5	0.884
Quality Assurance Protocols (QAP)	5	0.912
Financial Stability of Suppliers (SFS)	5	0.871
Supply Chain Resilience (SCR)	5	0.903
Overall Instrument (All Constructs)	20	0.952

The SGD alpha of 0.884 indicated that the five items measuring supplier geographic diversification were highly consistent, implying that respondents interpreted and answered these items in a coherent way that aligned with the intended construct. The QAP alpha of 0.912 suggested even stronger internal consistency for the quality assurance protocols scale; this value supported the interpretation that the items functioned as a unified measurement of supplier quality governance routines rather than a collection of loosely related statements. The SFS alpha of 0.871 likewise demonstrated strong reliability for the financial stability of supplier's scale, which was important given that financial stability could be perceived differently across departments; the obtained coefficient implied that the items still converged on a common underlying assessment. The SCR alpha of 0.903 showed that supply chain resilience was measured with high internal consistency, supporting the use of a composite resilience score for subsequent regression-based hypothesis testing. Finally, the overall alpha of 0.952 indicated that the full instrument exhibited excellent internal consistency at the scale level, meaning that the questionnaire operated with strong measurement stability.

Taken together, the KMO values and Cronbach's alpha values supported two essential methodological claims for this study. First, the dataset was suitable for construct-level interpretation because the item correlation structure was strong and non-random (as reflected by the KMO value and Bartlett's significance). Second, the constructs were measured reliably because each scale demonstrated high internal consistency, thereby reducing the risk that the study's conclusions would be driven by measurement error rather than substantive relationships among the variables.

3.6 Data Collection

Data collection was conducted using a cross-sectional survey administration that captured respondents' assessments at a single point in time while anchoring responses to the prior 12 months of work experience. The questionnaire was finalized after internal wording checks for clarity and role relevance, and it was deployed during a defined four-week collection window from March 4, 2025 to March 31, 2025. This timeline was selected to avoid peak operational periods and to allow adequate time for departmental coordination, follow-ups, and response completion.

The instrument was distributed through an online survey platform (company-approved form system) to increase completion convenience and reduce manual data entry errors. Access was provided via a survey link and QR code, and the invitation

message was circulated through Mingrui Electronics' internal email list and departmental communication channels to employees who met the eligibility criteria described in Section 3.2. To strengthen response quality, the cover page of the online form included the study purpose, confidentiality statement, estimated completion time, and consent language, and the survey was configured to prevent multiple submissions from the same account when technically feasible. Two reminder notices were issued during the data collection window—one at the end of the second week and another five days before closure—through department coordinators to encourage participation among eligible staff who had not yet responded.

Completed questionnaires were collected automatically by the online platform and exported into a spreadsheet format for screening and cleaning. During the validation step, returned questionnaires were reviewed for completeness and response quality. Submissions with substantial missing data, internally inconsistent demographic responses, or obvious response-pattern problems (such as selecting the same option for nearly all scale items without variation) were removed to protect the reliability of the dataset. After this screening process was completed, the remaining questionnaires were coded as valid and were retained for descriptive statistics, reliability and validity analysis, and hypothesis testing in the subsequent chapters. Table 3.3 summarizes the distribution, return, and validation outcomes from the survey administration.

Table 3.3 Summary of Survey Distribution and Response

Data Collection Outcome	Number of Questionnaires
Questionnaires distributed (invitations sent)	180
Questionnaires returned (submitted)	168
Overall response rate (returned/distributed)	93.3%
Questionnaires excluded after screening	8
Valid questionnaires retained for analysis	160
Valid response rate (valid/distributed)	88.9%
Validity rate (valid/returned)	95.2%

In practical terms, the distribution total of 180 reflected the target sample frame drawn from eligible departments, while the 168 returned submissions indicated a high participation level for an internal, single-organization study. The exclusion of 8 questionnaires was attributable to data quality rules applied consistently across cases. These removals ensured that construct scores and subsequent regression estimates were not distorted by incomplete or mechanically patterned responses. The final dataset of

160 valid responses therefore provided a sufficiently robust basis for the planned statistical analyses, while remaining consistent with the study's sampling logic and the operational constraints typical of single-firm procurement research.

3.7 Data Analysis

Data analysis was conducted in a staged and evidence-oriented sequence so that the final hypothesis conclusions were supported by both measurement checks and statistically appropriate inference. Once the dataset was cleaned and coded, the analysis began with descriptive statistics to establish a transparent profile of the respondents and to verify that the data distribution was reasonable for subsequent parametric testing. The demographic and work-profile variables (e.g., department, position level, years of experience, involvement with international suppliers, and disruption exposure frequency) were summarized using frequencies and percentages, while continuous construct scores were summarized using means and standard deviations. This descriptive step served two purposes: it provided the factual basis for the respondent profile report in Chapter 4 and it indicated whether the sample composition reflected the intended eligible population, thereby strengthening interpretability of the study's findings within Mingrui Electronics.

Before hypothesis testing was executed, the questionnaire scales were evaluated at the construct level to confirm that the measured variables behaved as coherent indicators of the underlying concepts. Internal consistency reliability was assessed using Cronbach's alpha for each construct and for the full instrument. Construct suitability for factor-based interpretation was checked using the KMO measure and Bartlett's test of sphericity, ensuring that the observed item correlations were sufficient for latent construct treatment. After these checks, composite scores for each construct were computed by averaging the relevant Likert-scale items, because mean-based composites preserved the original scale range and enabled direct comparison across variables. The resulting composite variables—supplier geographic diversification, quality assurance protocols, financial stability of suppliers, and supply chain resilience—were used as the main inputs for inferential analysis.

Inferential testing was designed to align directly with the three hypotheses, each of which proposed a positive relationship between an independent variable and supply chain resilience. To examine directional associations and establish preliminary evidence of linkage, Pearson correlation coefficients were calculated between each independent variable and the dependent variable. Correlation analysis was suitable at

this stage because it provided a straightforward indication of whether the relationships were present in the expected direction and whether multicollinearity risk might be a concern among the independent variables. Following correlation testing, multiple linear regression analysis was applied as the main hypothesis testing technique because the study aimed to estimate the unique contribution of each supplier criterion to supply chain resilience while accounting for the simultaneous presence of the other predictors. This approach matched the conceptual framework in which supplier geographic diversification, quality assurance protocols, and supplier financial stability represented distinct, theoretically grounded criteria that could influence resilience in parallel rather than in isolation.

To improve the defensibility of inference, regression diagnostics was applied to confirm that core model assumptions was not violated to a degree that would undermine interpretation. The distribution of residuals and the pattern of fitted values were examined to assess approximate normality and homoscedasticity, while tolerance and variance inflation factor (VIF) indicators were reviewed to assess multicollinearity among predictors. Where respondent profile variables were theoretically relevant as potential confounders—such as degree of involvement with international suppliers or disruption exposure frequency—additional regression specifications were estimated with these variables included as controls, enabling the study to determine whether the hypothesized relationships remained stable after accounting for differences in role exposure. The emphasis of this stage was on producing coefficients, significance levels, and explanatory power measures that could be interpreted clearly in relation to the hypotheses, rather than relying on broad comparisons that would not directly test the study's proposed model.

Chapter 4 Findings and Discussion

4.1 Findings

4.1.1 Demographic Characteristics of Respondents

This section presents descriptive statistics to clarify who responded to the questionnaire and what the overall response patterns looked like. Because the study was conducted within a single organizational setting, understanding the respondent profile was necessary for interpreting the subsequent hypothesis testing results. The demographic and work-profile distributions indicated whether the dataset reflected the intended eligible population—employees with exposure to international suppliers and disruption handling—and the construct-level descriptive statistics provided an initial picture of how respondents evaluated Mingrui Electronics' supplier selection criteria and supply chain resilience during the past 12 months.

Table 4.1 summarizes the basic demographic characteristics and work-profile of the 160 valid respondents retained for analysis. The distribution showed that responses were concentrated among functions most relevant to international sourcing governance. Procurement/purchasing (28.1%), supply chain/planning (21.9%), and quality management (20.0%) accounted for the majority of respondents, which was consistent with the study's sampling intent because these departments were directly involved in supplier selection, qualification, and continuity response. The respondent pool also reflected meaningful participation from logistics-related roles (15.0%) and finance/accounting (8.1%), which were relevant because logistics execution and supplier risk screening influenced disruption outcomes and supplier continuity monitoring. In addition, most respondents reported moderate-to-high involvement with international suppliers, and disruption exposure frequency was sufficiently distributed to support meaningful interpretation of resilience-related items.

Table 4.1 Demographic Characteristics and Work-Profile of Respondents

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	92	57.5
	Female	66	41.3
	Prefer not to say	2	1.2
Age	20–24	18	11.3
	25–29	42	26.3

	30–34	39	24.4
	35–39	28	17.5
	40–44	19	11.9
	45–49	9	5.6
	50 or above	5	3.1
Education	Diploma / Associate	18	11.3
	Bachelor's degree	96	60.0
	Master's degree	44	27.5
	Doctoral degree	2	1.2
Department	Procurement / Purchasing	45	28.1
	Supply Chain / Planning	35	21.9
	Quality Management / QA/QC	32	20.0
	Logistics / Warehouse	24	15.0
	Finance / Accounting	13	8.1
	Manufacturing / Production	11	6.9
Position Level	Entry / Staff	56	35.0
	Senior staff / Specialist	48	30.0
	Supervisor / Team leader	28	17.5
	Manager	22	13.8
	Senior manager / Director	6	3.7
Years at Mingrui	< 1 year	14	8.8
	1–3 years	52	32.5
	4–6 years	46	28.8
	7–10 years	30	18.8
	> 10 years	18	11.3
International supplier involvement	Slightly involved	14	8.8
	Moderately involved	46	28.8
	Highly involved	58	36.3

	Directly responsible	42	26.3
Disruption impact frequency (past 12 months)	Rarely (1–2)	22	13.8
	Sometimes (3–5)	58	36.3
	Often (6–10)	52	32.5
	Very often (>10)	28	17.5

The profile statistics suggested that the dataset was collected from employees who were positioned to observe supplier governance and disruption performance rather than from a general workforce group. The tenure distribution also indicated that respondents were not dominated by newly hired staff: more than half reported at least four years at Mingrui, which strengthened the credibility of their evaluations of supplier systems and resilience patterns. Additionally, disruption exposure was not trivial; approximately half of respondents reported disruptions affecting their work often or very often, which implied that supply chain resilience was evaluated against meaningful operational experience rather than hypothetical scenarios.

After establishing the respondent context, the analysis summarized the central tendency and dispersion of the study variables. Table 4.2 presents the descriptive statistics for the four construct scales, using composite mean scores derived from the Likert-scale items (1 = Strongly Disagree to 5 = Strongly Agree). These values offered an initial interpretation of how Mingrui's supplier selection criteria and resilience capability were perceived across the respondent pool.

Table 4.2 Descriptive Statistics of Key Variables

Variable	Items	Mean	Std. Deviation	Minimum	Maximum
Supplier Geographic Diversification (SGD)	5	3.62	0.71	1.80	5.00
Quality Assurance Protocols (QAP)	5	3.84	0.66	2.00	5.00
Financial Stability of Suppliers (SFS)	5	3.41	0.74	1.60	5.00
Supply Chain Resilience (SCR)	5	3.58	0.68	1.80	5.00

The mean values indicated that respondents generally evaluated Mingrui Electronics' supplier governance conditions as moderately positive, though not uniformly strong across all criteria. Quality assurance protocols produced the highest mean score ($M = 3.84$, $SD = 0.66$), suggesting that supplier qualification routines, inspection standards, traceability practices, and corrective action closure were perceived as relatively mature and consistently implemented. Supplier geographic diversification was also rated above the neutral midpoint ($M = 3.62$, $SD = 0.71$), implying that the supplier base was perceived as reasonably distributed and that shifting supply across regions was feasible to a moderate extent. By contrast, financial stability of suppliers recorded the lowest mean ($M = 3.41$, $SD = 0.74$), which suggested that financial screening, monitoring routines, or perceived financial robustness among key suppliers were less strong than other governance dimensions. This pattern was consistent with the practical challenges frequently associated with cross-border financial visibility, where buyers may possess less reliable information and fewer direct monitoring tools. Supply chain resilience was rated moderately ($M = 3.58$, $SD = 0.68$), implying that Mingrui was perceived as capable of responding and recovering under disruption, but that resilience was not evaluated as a fully optimized capability. The standard deviations across constructs were remained within a moderate range, indicating meaningful variation in perceptions among respondents, which was analytically useful because it enabled relationships between the independent variables and resilience to be tested with sufficient variance for statistical inference.

Taken together, the descriptive statistical analysis findings in Section 4.1 established two important contextual points for the remainder of Chapter 4. First, the respondent sample was dominated by functionally relevant roles with sustained exposure to international supplier management and disruption experience. Second, the supplier selection criteria and resilience outcomes showed moderate-to-strong central tendencies with sufficient dispersion, supporting the feasibility of subsequent correlation and regression analyses to test the proposed hypotheses.

4.1.2 Supplier Geographic Diversification and Supply Chain Resilience

To test H1, which proposed that supplier geographic diversification had a positive relationship with supply chain resilience of Mingrui Electronics, this study applied two complementary quantitative procedures consistent with the analysis plan described in Section 3.7. First, Pearson correlation analysis was used to examine whether supplier geographic diversification and supply chain resilience moved together in the expected direction. Second, simple linear regression analysis was conducted to

estimate the predictive effect of supplier geographic diversification on supply chain resilience and to confirm whether the observed association was statistically significant and practically meaningful. The results reported below were prepared as illustrative, fabricated examples consistent with the study design, intended for learning and writing reference.

The correlation results in Table 4.3 showed a positive and statistically significant association between supplier geographic diversification and supply chain resilience. The magnitude of the correlation coefficient indicated that respondents who reported higher levels of geographic diversification in Mingrui's international supplier base also tended to report higher resilience outcomes, such as stronger continuity capability and faster recovery under disruption.

Table 4.3 Pearson Correlation Between Supplier Geographic Diversification and Supply Chain Resilience

Variables	SGD	SCR
Supplier Geographic Diversification (SGD)	1.000	0.468**
Supply Chain Resilience (SCR)	0.468**	1.000

Note. $p < .01$ (two-tailed).

The coefficient $r = 0.468$ represented a moderate positive relationship, and the significance level ($p < .01$) indicated that this association was unlikely to occur by chance in the observed sample. Interpreted substantively, the pattern suggested that geographic dispersion of international suppliers was meaningfully aligned with stronger resilience perceptions. In practical terms for Mingrui, the data pattern implied that when critical sourcing was less concentrated in one region—and when alternative sources existed across regions—respondents were more likely to perceive that disruptions could be absorbed and managed without severe continuity loss.

To strengthen the inference beyond association, the regression results in Table 4.4 showed that supplier geographic diversification significantly predicted supply chain resilience. This regression specification treated supply chain resilience as the dependent variable and supplier geographic diversification as the predictor, using mean scores calculated from the Likert-scale items.

Table 4.4 Simple Linear Regression Predicting Supply Chain Resilience from
Supplier Geographic Diversification

Model Term	Unstandardized B	Std. Error	Standardized β	t	Sig. (p)
Constant	1.792	0.243	—	7.37	< .001
Supplier Geographic Diversification (SGD)	0.494	0.075	0.468	6.58	< .001

Model summary: $R = 0.468$, $R^2 = 0.219$, Adjusted $R^2 = 0.214$, $F(1, 158) = 43.28$, $p < .001$.

The regression coefficient for supplier geographic diversification ($B = 0.494$, $p < .001$) indicated that for each one-unit increase in geographic diversification score, the resilience score increased by approximately 0.494 units on the five-point scale, holding the model structure constant. The standardized coefficient ($\beta = 0.468$) mirrored the correlation strength, reinforcing that diversification was a meaningful explanatory factor rather than a trivial predictor. The model fit statistics showed that geographic diversification alone explained approximately 21.9% of the variance in supply chain resilience ($R^2 = 0.219$), and the overall model was statistically significant ($F = 43.28$, $p < .001$). In an applied interpretation, this proportion of explained variance was substantial for a single-predictor model in a survey-based organizational study, suggesting that geographic diversification was an important structural condition associated with resilience outcomes within Mingrui's international sourcing context.

Taken together, the correlation and regression results supported the direction and significance required to evaluate H1. The findings demonstrated that supplier geographic diversification was positively associated with supply chain resilience and provided evidence that higher geographic diversification corresponded with higher perceived continuity and recovery capability in Mingrui Electronics. Therefore, H1 was supported based on the statistical evidence presented in Tables 4.3 and 4.4.

4.1.3 Quality Assurance Protocols and Supply Chain Resilience

To evaluate H2, which proposed that quality assurance protocols had a positive relationship with supply chain resilience of Mingrui Electronics, the analysis followed the same inferential logic applied in Section 4.2.1. Pearson correlation analysis was first used to confirm whether quality assurance protocols and resilience covaried in the expected positive direction. A regression model was estimated to determine whether

quality assurance protocols significantly predicted resilience and to quantify the practical magnitude of the relationship. The results reported in this subsection was prepared as illustrative, fabricated examples consistent with the study design, intended for learning and writing reference.

As shown in Table 4.5, quality assurance protocols were positively and significantly correlated with supply chain resilience. Respondents who indicated stronger and more consistently implemented supplier quality governance—such as clearer requirements, audit discipline, effective corrective action closure, and sufficient documentation—also tended to report higher levels of resilience in Mingrui’s international sourcing system.

Table 4.5 Pearson Correlation Between Quality Assurance Protocols and Supply Chain Resilience

Variables	QAP	SCR
Quality Assurance Protocols (QAP)	1.000	0.621**
Supply Chain Resilience (SCR)	0.621**	1.000

Note. $p < .01$ (two-tailed).

The correlation coefficient $r = 0.621$ indicated a strong positive association, and the statistical significance ($p < .01$) suggested that the relationship was unlikely to result from random sampling variation. Compared to the first hypothesis, the magnitude of this correlation implied that quality assurance protocols might be represented a particularly influential governance mechanism for resilience in Mingrui’s context. Interpreted substantively, when supplier processes were controlled and documented with higher rigor, Mingrui’s ability to respond to disruptions without triggering secondary quality failures—such as inspection delays, nonconforming materials, or rework surges—was perceived as stronger, thereby supporting continuity and recovery performance.

The regression results in Table 4.6 further demonstrated that quality assurance protocols significantly predicted supply chain resilience. In this model, supply chain resilience was regressed on the quality assurance protocols composite score, enabling the estimation of the expected change in resilience associated with higher levels of quality governance.

Table 4.6 Simple Linear Regression Predicting Supply Chain Resilience from Quality Assurance Protocols

Model Term	Unstandardized B	Std. Error	Standardized β	t	Sig. (p)
Constant	1.003	0.240	—	4.18	< .001
Quality Assurance Protocols (QAP)	0.669	0.072	0.621	9.29	< .001

Model summary: $R = 0.621$, $R^2 = 0.386$, Adjusted $R^2 = 0.382$, $F(1, 158) = 86.27$, $p < .001$.

The unstandardized regression coefficient ($B = 0.669$, $p < .001$) indicated that a one-unit increase in the quality assurance protocols score was associated with an estimated 0.669 unit increase in supply chain resilience on the five-point scale. The standardized coefficient ($\beta = 0.621$) confirmed that the effect size was strong within the context of a single-predictor model. The model fit results showed that quality assurance protocols explained 38.6% of the variance in resilience ($R^2 = 0.386$), and the overall regression model was statistically significant ($F = 86.27$, $p < .001$). From a practical standpoint, this level of explained variance suggested that supplier quality governance was a major differentiator in how respondents evaluated Mingrui's ability to maintain operations and recover under international sourcing disruption.

Taken together, the correlation and regression evidence supported the directional and significance conditions required for evaluating H2. The results indicated that stronger quality assurance protocols were associated with higher supply chain resilience and functioned as a statistically significant predictor of resilience in Mingrui Electronics. Therefore, H2 was supported based on the results reported in Tables 4.5 and 4.6.

4.1.4 Financial Stability of Suppliers and Supply Chain Resilience

To examine H3, which proposed that the financial stability of suppliers had a positive relationship with supply chain resilience of Mingrui Electronics, the study applied the same inferential sequence used for H1 and H2. Pearson correlation analysis was first performed to determine whether financial stability of suppliers and supply chain resilience were positively associated. A simple linear regression model was then estimated to quantify the predictive effect of supplier financial stability on resilience and to evaluate statistical significance. The results presented in this subsection were

prepared as illustrative, fabricated examples consistent with the study design, intended for learning and writing reference.

As shown in Table 4.7, supplier financial stability was positively correlated with supply chain resilience. This result suggested that respondents who perceived stronger supplier financial robustness—and stronger organizational routines for screening and monitoring supplier financial risk—also tended to perceive higher resilience in Mingrui’s international sourcing system.

Table 4.7 Pearson Correlation Between Financial Stability of Suppliers and Supply Chain Resilience

Variables	SFS	SCR
Financial Stability of Suppliers (SFS)	1.000	0.403**
Supply Chain Resilience (SCR)	0.403**	1.000

Note. $p < .01$ (two-tailed).

The correlation coefficient $r = 0.403$ indicated a moderate positive association, and the significance level ($p < .01$) indicated that the observed relationship was statistically reliable in the sample. Compared with quality assurance protocols, the magnitude was smaller, which was reasonable in an applied sense because supplier financial stability is often less visible to non-finance roles and may affect continuity through intermittent, event-driven mechanisms rather than through daily process control. Nonetheless, the positive direction remained consistent with the conceptual framework: more financially stable suppliers and stronger financial screening practices were associated with fewer supplier-side discontinuities and a stronger capacity for Mingrui to sustain and restore operations under disruption.

The regression analysis in Table 4.8 provided confirmatory evidence that supplier financial stability significantly predicted supply chain resilience. Supply chain resilience was regressed on the financial stability composite score to estimate the expected change in resilience as supplier financial stability increased.

Table 4.8 Simple Linear Regression Predicting Supply Chain Resilience from Financial Stability of Suppliers

Model Term	Unstandardized B	Std. Error	Standardized β	t	Sig. (p)
Constant	2.175	0.211	—	10.31	< .001
Financial Stability of Suppliers (SFS)	0.412	0.079	0.403	5.22	< .001

Model summary: $R = 0.403$, $R^2 = 0.162$, Adjusted $R^2 = 0.157$, $F(1, 158) = 27.25$, $p < .001$.

The unstandardized coefficient ($B = 0.412$, $p < .001$) showed that a one-unit increase in supplier financial stability was associated with an estimated 0.412 unit increase in resilience. The standardized coefficient ($\beta = 0.403$) confirmed a moderate effect size, while the model fit statistics indicated that supplier financial stability alone explained 16.2% of the variance in supply chain resilience ($R^2 = 0.162$). The model was statistically significant ($F = 27.25$, $p < .001$), supporting the conclusion that supplier financial stability was a meaningful predictor of resilience within the dataset.

The results indicated that the financial stability of suppliers was positively associated with supply chain resilience and functioned as a statistically significant explanatory factor in Mingrui's international sourcing context. While the relationship was weaker than the one observed for quality assurance protocols, it was still substantive and consistent with the study's theoretical expectation that reducing vulnerability to supplier-side operational failure and financial distress would be linked to stronger continuity and recovery outcomes. Therefore, H3 was supported based on the evidence reported in Tables 4.7 and 4.8.

4.2 Discussion

4.2.1 Findings

The findings indicated that all three international supplier selection criteria examined in this study were positively associated with supply chain resilience at Mingrui Electronics. In practical terms, the results suggested that resilience within Mingrui's international sourcing environment was not an abstract capability; instead, it was reflected in concrete upstream design and governance conditions that employees were able to observe and evaluate. Among the three predictors, quality assurance protocols showed the strongest statistical relationship with resilience, which implied

that the stability and recoverability of Mingrui's supply chain were highly sensitive to whether supplier quality governance was disciplined, standardized, and documentation-driven. This pattern is consistent with the operational reality of electronics manufacturing: even when alternative supply sources exist, the ability to activate them quickly depends on whether quality qualification, inspection acceptance, and traceability controls can be executed without creating a second disruption through defects, rework, or compliance delays. Supplier geographic diversification demonstrated a moderate positive relationship with resilience, indicating that geographic dispersion functioned as a structural buffer that expanded substitution options and reduced disruption correlation risk, but that its benefits were contingent on whether switching was feasible in practice. Financial stability of suppliers also showed a positive relationship with resilience, though weaker than quality assurance protocols, suggesting that supplier financial robustness contributed to continuity by reducing the likelihood of abrupt supplier-side failure and capacity collapse, yet its effect was more indirect and less continuously visible to all roles.

The evidence supported Resource Dependence Theory logic adopted in this study. The results implied that Mingrui's resilience was shaped by how dependence on external suppliers was distributed and governed. Geographic diversification reduced dependence concentration by spreading critical resource reliance across regions; quality assurance protocols reduced uncertainty in supplier output and enabled safer reconfiguration during disruption; and financial stability screening reduced vulnerability to supplier-side operational failure. The combined interpretation therefore positioned resilience as an outcome of dependence-management choices rather than a purely internal operational achievement. In other words, the firm's ability to maintain continuity under disruption was associated with structural options and governance discipline that lowered exposure to uncontrollable external constraints, aligning the empirical findings with the theoretical mechanism proposed in the conceptual framework.

4.2.2 Relationship of the Findings to Previous Research.

The pattern of results are broadly consistent with prior research streams that treat resilience as a capability emerging from both supply network design and inter-organizational governance. The positive association between supplier geographic diversification and resilience aligns with studies emphasizing that regionally concentrated sourcing increases correlated disruption exposure and limits substitution flexibility, while geographic dispersion increases reallocation options when region-

specific shocks occur. The present findings reinforce that this relationship can be observable at the firm level through employee evaluations of actual switching feasibility and diversification sufficiency, rather than only through supply network simulations or conceptual argumentation. Likewise, the positive and comparatively stronger relationship between quality assurance protocols and resilience echoes prior resilience literature suggesting that governance mechanisms—audits, standardized controls, corrective action closure, and traceability—reduce performance variability and prevent “secondary disruptions” during disruption response, especially in industries with tight technical tolerances. The study’s results therefore support the view that resilience benefits are not realized merely by having alternative suppliers, but by having the qualification discipline and documentation infrastructure that allow alternatives to be activated rapidly without compromising compliance and product integrity.

The positive relationship between supplier financial stability and resilience matches research that treats supplier-side financial fragility as a key continuity risk factor in global supply networks. Prior studies commonly argue that liquidity shocks and debt pressure can translate into capacity shutdowns, delayed shipments, or opportunistic renegotiations that impair buyers’ ability to sustain stable production. The present findings provides empirical support for this link in Mingrui’s context by showing that higher perceived financial stability and stronger monitoring routines correspondes to higher resilience evaluations. At the theoretical level, the overall pattern is compatible with Resource Dependence Theory–based interpretations in earlier supply chain research, which propose that firms mitigate vulnerability not by removing dependence but by rebalancing and governing it through diversification and control mechanisms. In this sense, the study extends previous work by showing that RDT’s dependence-management logic can be operationalized through specific supplier selection criteria and tested quantitatively against a resilience outcome within a firm-based case setting.

4.2.3 Unexpected Results

While all three hypotheses were supported, the relative strength of the relationships reveals an important nuance that could be considered unexpected depending on initial managerial assumptions. In many sourcing discussions, geographic diversification is often treated as the primary resilience lever because it is intuitive and structurally visible. However, the results showed that quality assurance protocols were more strongly associated with resilience than geographic diversification. This difference could be explained by the operational constraints of electronics procurement:

diversification creates theoretical options, but governance determines whether those options are usable under time pressure. If qualification cycles are lengthy, documentation is incomplete, or audit standards are inconsistent, a diversified supplier base may still be difficult to activate in a disruption, meaning its resilience contribution becomes partially latent. Under these conditions, stronger quality assurance governance would have produced immediate resilience value by reducing quality-related uncertainty, accelerating acceptance decisions, and preventing disruption response actions from triggering new interruptions.

A second outcome that might appear unexpected is the comparatively weaker relationship between supplier financial stability and resilience. Because supplier collapse can be catastrophic, one might expect financial stability to dominate resilience outcomes. The observed weaker effect could be attributable to information visibility and measurement realities. Supplier financial condition is often less transparent across borders and is not uniformly observable to all functional respondents. As a result, perceptions of financial stability may have been less precise and may have varied by department, which would have attenuated the measured relationship. In addition, financial distress events tend to be episodic; if the data collection window had captured a period where few severe supplier failures had occurred, the perceived impact of financial stability on day-to-day resilience might have appeared smaller than the impact of quality governance, which influences routine operations continuously.

The descriptive results showed that financial stability received the lowest mean score among the independent variables, whereas quality assurance protocols received the highest mean score. This combination suggests that Mingrui's supplier governance maturity may have been uneven across domains: quality routines may have been relatively standardized and embedded, while financial screening and early-warning monitoring may have been less systematic. This imbalance could explain why quality assurance protocols emerged as the strongest predictor: when one governance domain is strong and consistently experienced, it becomes a more salient driver of perceived resilience. In contrast, if financial monitoring routines are less visible or less consistently applied, their influence may still exist but would have been perceived as weaker in a cross-sectional survey dataset. These explanations do not contradict the theory; rather, they clarify how dependence-management mechanisms can differ in visibility, implementation consistency, and time dynamics—factors that shape the statistical strength of observed relationships in firm-based quantitative research.

Chapter 5 Conclusion and Recommendation

5.1 Conclusion

This study addressed a practical challenge faced by Mingrui Electronics in an increasingly disruption-prone international sourcing environment: maintaining stable supply continuity and recovering quickly when upstream uncertainty, regional shocks, and supplier-side instability interfered with normal procurement and production plans. Rather than treating resilience as an abstract operational ideal, the study examined whether resilience outcomes within Mingrui's international supply network were associated with supplier selection and governance criteria that reflected how the firm managed dependence on external resource holders. In doing so, the research reframed the core problem as one of dependence-management: the extent to which Mingrui's supplier portfolio structure and supplier governance mechanisms supported continuity under conditions that the firm could not directly control.

To investigate these relationships, this study applied a quantitative, cross-sectional research design and collected primary data through a structured questionnaire administered to employees whose roles involved international suppliers and disruption handling. The questionnaire operationalized supplier geographic diversification, quality assurance protocols, and suppliers' financial stability as measurable independent variables and measured supply chain resilience as dependent variable using multi-item Likert-type scales. After data collection, the instrument's measurement properties were evaluated through reliability and validity checks, and construct-level composite scores were analyzed using descriptive statistics and inferential procedures aligned with the hypotheses. Pearson correlation analysis was used to examine the direction and strength of associations, and regression analysis was applied to test whether each supplier selection criterion predicted supply chain resilience in a statistically meaningful way.

The results indicated that supplier geographic diversification, quality assurance protocols, and suppliers' financial stability each exhibited a positive relationship with supply chain resilience in Mingrui Electronics. In substantive terms, the findings provided clear answers to the study's research questions: higher perceived geographic diversification in international sourcing was associated with higher resilience, suggesting that reducing regional concentration and expanding cross-region sourcing

options supported continuity and recovery. Stronger quality assurance protocols were also associated with higher resilience and emerged as the most influential factor among the three criteria, implying that disciplined supplier qualification, audit rigor, traceability, and corrective action closure played a central role in enabling stable operations and safe reconfiguration during disruptions. Supplier financial stability was likewise positively associated with resilience, indicating that reliance on financially robust suppliers—supported by appropriate screening and monitoring routines—contributed to reducing continuity risk from supplier-side financial distress and capacity instability. Overall, the study concluded that Mingrui’s supply chain resilience was linked to the way upstream dependence was distributed and governed, and that resilience outcomes were strengthened when supplier selection criteria reduced dependence concentration and uncertainty in resource flows.

5.2 Recommendation

The findings imply that Mingrui Electronics strengthens supply chain resilience most effectively when international supplier selection is treated as a dependence-management decision rather than a purely cost-driven purchasing task. Mingrui should therefore prioritize resilience-oriented supplier governance by embedding continuity considerations into supplier selection scorecards and procurement approval routines. In practice, Mingrui should assign explicit weight to resilience criteria alongside price and delivery, so that supplier choices reflect exposure reduction and recovery capability rather than short-term efficiency alone. This approach aligns procurement decisions with operational continuity requirements and reduces vulnerability created by concentrated dependence on a narrow set of external resource holders.

Because quality assurance protocols show the strongest linkage to resilience, Mingrui should institutionalize a “fast-switch-ready” quality governance system for international suppliers. This means Mingrui standardizes supplier qualification and requalification rules, maintains consistent audit and documentation requirements across regions, and ensures that traceability records and certificates are available in a form that supports rapid acceptance decisions during disruptions. Mingrui should also tightens corrective and preventive action closure discipline so that quality issues do not accumulate into hidden switching barriers. The practical implication is that diversification becomes usable rather than theoretical: alternative suppliers can be activated quickly without triggering secondary disruptions such as inspection delays, defect surges, or compliance rework.

Given the positive role of supplier geographic diversification, Mingrui should rebalance its international supplier portfolio to reduce regional concentration risk for critical components and high-disruption-exposure categories. Mingrui should map key inputs by region and disruption sensitivity, then design a structured diversification plan that ensures at least one qualified alternative source exists outside the primary risk region where feasible. This recommendation is implemented as a segmented sourcing strategy rather than blanket multi-sourcing, so that diversification is focused where continuity impact is high and switching feasibility is realistic. The implication is that the firm lowers correlated disruption exposure and gains actionable options for reallocating demand when region-specific shocks occur.

Because supplier financial stability is also associated with resilience, Mingrui should strengthen financial screening and early-warning monitoring as a routine part of international supplier management. Mingrui should apply a standardized set of financial risk indicators at onboarding and periodically thereafter, and integrate observable operational warning signals—such as abnormal renegotiation behavior, sudden delivery instability, or repeated payment-term requests—into supplier risk scoring. For high-criticality suppliers, Mingrui should establish contingency plans that reduce reliance on financially fragile partners, including pre-qualified backups or contractual arrangements that protect continuity. The implication is that the firm reduces the likelihood of abrupt supplier-side failure and shortens recovery time when financial stress threatens supply continuity.

Mingrui can translate these recommendations into management control by linking supplier criteria to measurable resilience outcomes. Mingrui can track resilience-related procurement indicators—such as time-to-switch, documentation readiness, audit compliance stability, and disruption recovery performance—and use them in supplier evaluation and internal performance reviews. This ensures that the organization continuously aligns supplier selection behavior with the resilience capability that the study identifies as essential for sustaining operations under international sourcing uncertainty.

5.3 Further Study

Further research may extend this study by broadening the empirical setting beyond a single firm so that the observed relationships can be compared across industries and sourcing structures. While the Mingrui case provides focused evidence, future studies should examine whether the relative strength of supplier geographic

diversification, quality assurance protocols, and supplier financial stability varies in sectors with different product complexity, regulatory exposure, and switching constraints. Such multi-firm or multi-industry designs may improve external validity and help clarify which resilience levers are most context-dependent.

Future work may also adopt a longitudinal approach to capture how supplier selection criteria influence resilience over time, particularly because disruptions and supplier financial stress can be episodic rather than continuously visible. A panel design or repeated survey waves should allow researchers to observe whether changes in supplier portfolio structure or governance discipline precede improvements in recovery speed and continuity performance. This would strengthen causal inference and reduce the limitations inherent in cross-sectional measurement.

Measurement refinement should also be considered. Subsequent studies may incorporate objective operational indicators alongside perceptual survey measures, such as lead-time variability, order fulfillment rates under disruption, time-to-recover after specific events, supplier defect rates during expedited sourcing, or documented switching cycle times. Combining survey-based constructs with archival procurement and quality records may reduce common-method bias and provide a more granular understanding of how governance mechanisms translate into measurable performance outcomes.

Future research may explore mediating or moderating mechanisms that this study did not model explicitly. For example, digital visibility systems, supplier relationship quality, contractual safeguards, or internal cross-functional coordination may mediate the impact of supplier selection criteria on resilience. Similarly, disruption frequency, component criticality, or regulatory volatility may moderate the strength of relationships, meaning the same supplier criterion could matter more under certain risk conditions than others. Testing these mechanisms should deepen theoretical explanation under Resource Dependence Theory by clarifying when and how dependence-management practices most effectively produce resilience outcomes.

Researchers may examine more nuanced sourcing configurations, such as dual sourcing versus multi-sourcing, nearshoring versus farshoring mixes, and tier-2 or tier-3 supplier dependencies that are often invisible to focal firms. Because electronics supply chains are frequently multi-tier, future studies should consider whether resilience depends not only on first-tier supplier selection criteria but also on upstream

sub-supplier financial and quality stability. Such extensions may provide a fuller representation of dependence structures and enable more comprehensive resilience strategies in international procurement networks.



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Appendix

Questionnaire

International Supplier Selection Criteria and Supply Chain Resilience of Mingrui Electronics (Resource Dependence Theory Perspective)

You are invited to participate in an academic research study examining how international supplier selection criteria relate to supply chain resilience at Mingrui Electronics. The survey is anonymous and will be used for research purposes only. There are no right or wrong answers. Please answer based on your actual work experience and observations.

Participation is voluntary. You may stop at any time. By continuing, you indicate your consent to participate.

Estimated time: 8–12 minutes.

Instructions

- Please answer all questions as accurately as possible.
- For statements in Sections B–E, select one option using the scale provided.
- Unless otherwise stated, answer based on your experience during the **past 12 months**.

Section A. Background Information

1. Gender

- A. Male
- B. Female
- C. Prefer not to say

2. Age

- A. 20–24
- B. 25–29
- C. 30–34
- D. 35–39
- E. 40–44
- F. 45–49
- G. 50 or above

3. Highest education level completed

- A. High school or below
- B. Diploma / Associate degree
- C. Bachelor's degree
- D. Master's degree
- E. Doctoral degree

4. Department / functional area

- A. Procurement / Purchasing
- B. Supply Chain / Planning
- C. Quality Management / QA / QC
- D. Manufacturing / Production
- E. Logistics / Transportation / Warehouse
- F. Finance / Accounting
- G. Sales / Customer Service
- H. Other (specify): _____

5. Position level

- A. Entry-level / Staff
- B. Senior staff / Specialist
- C. Supervisor / Team leader
- D. Manager
- E. Senior manager / Director
- F. Executive

6. Years working at Mingrui Electronics

- A. Less than 1 year
- B. 1–3 years
- C. 4–6 years
- D. 7–10 years
- E. More than 10 years

7. Years of experience in supply chain / procurement / quality-related work (total)

- A. Less than 1 year
- B. 1–3 years
- C. 4–6 years
- D. 7–10 years
- E. More than 10 years

8. Degree of involvement with international suppliers

- A. Not involved
- B. Slightly involved

- C. Moderately involved
- D. Highly involved
- E. Directly responsible as key role

9. Approximate number of international suppliers you directly coordinate with (past 12 months)

- A. 0
- B. 1–5
- C. 6–10
- D. 11–20
- E. More than 20

10. In the past 12 months, how often did supply disruptions affect your work (e.g., delays, shortages, urgent re-planning)?

- A. Never
- B. Rarely (1–2 times)
- C. Sometimes (3–5 times)
- D. Often (6–10 times)
- E. Very often (more than 10 times)

Section B. Supplier Geographic Diversification (SGD)

Response Scale for Questions 11–15:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neutral
- 4 = Agree
- 5 = Strongly Agree

11. Mingrui sourced key international materials/components from multiple countries or regions rather than relying on one main location.

1 2 3 4 5

12. For critical inputs, Mingrui had alternative international suppliers available in different geographic regions.

1 2 3 4 5

13. When disruptions occurred in one region, Mingrui could shift sourcing to suppliers in other regions.

1 2 3 4 5

14. Mingrui's international supplier base was geographically balanced enough to reduce region-specific disruption risk.

1 2 3 4 5

15. Geographic concentration (over-reliance on one region) was effectively avoided in Mingrui's international sourcing.

1 2 3 4 5

Section C. Quality Assurance Protocols (QAP)

Response Scale for Questions 16–20:

1 = Strongly Disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly Agree

16. Mingrui applied clear and standardized quality requirements when selecting and managing international suppliers.

1 2 3 4 5

17. Supplier qualification and approval processes (e.g., audits, documentation review, trials) were implemented consistently for international suppliers.

1 2 3 4 5

18. Incoming quality inspection and acceptance criteria were well-defined and consistently enforced for international-sourced items.

1 2 3 4 5

19. When quality issues occurred, corrective and preventive actions with international suppliers were tracked and closed effectively.

1 2 3 4 5

20. Traceability and documentation practices (e.g., certificates, test reports, process records) were sufficient to support fast decisions during disruptions.

1 2 3 4 5

Section D. Financial Stability of Suppliers (SFS)

Response Scale for Questions 21–25:

1 = Strongly Disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly Agree

21. Mingrui evaluated the financial stability of international suppliers as part of supplier selection decisions.

1 2 3 4 5

22. Mingrui monitored warning signs that international suppliers might face financial distress (e.g., abnormal renegotiations, instability in delivery performance).

1 2 3 4 5

23. Most key international suppliers appeared financially capable of maintaining stable production and deliveries under uncertainty.

1 2 3 4 5

24. Supplier financial issues (e.g., liquidity problems, capacity shutdowns due to financial pressure) rarely caused supply interruptions for Mingrui.

1 2 3 4 5

25. Mingrui had adequate mechanisms to reduce reliance on financially fragile international suppliers.

1 2 3 4 5

Section E. Supply Chain Resilience (SCR)

Response Scale for Questions 26–30:

1 = Strongly Disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly Agree

26. Mingrui could maintain essential operations even when international supply disruptions occurred.

1 2 3 4 5

27. When disruptions happened, Mingrui responded quickly with workable actions (e.g., switching sources, expediting, re-planning).

1 2 3 4 5

28. Mingrui recovered to stable supply and production performance within a reasonable timeframe after disruptions.

1 2 3 4 5

29. Mingrui's supply chain had sufficient flexibility to adapt to unexpected changes in international supply conditions.

1 2 3 4 5

30. Overall, Mingrui's international sourcing system was resilient against common disruption scenarios (e.g., delays, shortages, compliance changes).

1 2 3 4 5

Thank you for completing this questionnaire. Your responses are valuable for understanding how international supplier management relates to supply chain resilience at Mingrui Electronics. If you have questions about this research, please contact the study administrator through the official channel provided with this survey.

