



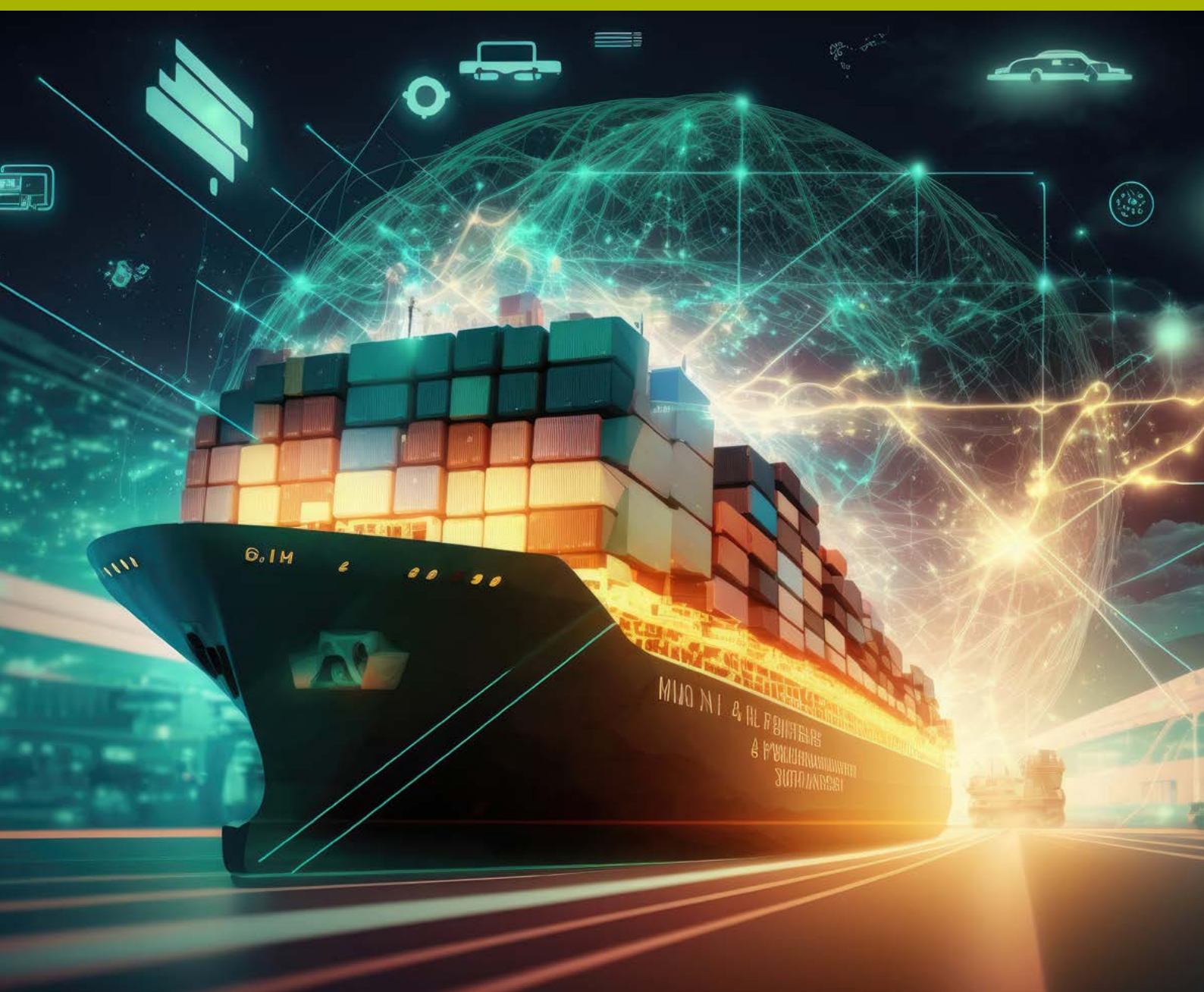
Chartered Institute of
Internal Auditors



Supply Chain Risks Part 2

Supply Chain Resilience and Security:

Harnessing the Potential of Internal Audit





Foreword

The resilience and security of supply chains have emerged as a major concern for organisations. The COVID-19 pandemic exposed the vulnerabilities of supply chain systems disrupting the flow of essential goods. The war in Ukraine and ensuing sanctions against Russia further strained supply chains, restricting access to raw materials such as grain and gas, and causing inflationary pressures. Geopolitical tensions between China and the West have added further supply chain anxieties, with tensions in the South China Sea raising concerns about disruptions to global shipping lanes and trade. The Suez Canal blockage in 2021 is a perfect example of the fragility of global supply networks and the importance of contingency planning and supply chain resilience and security strategies.

These events and others like them have compelled organisations to seek strategies to make their supply chain more resilient and secure. Addressing these supply chain challenges requires a multifaceted approach. This is where internal audit can bring value as the assurance provided by the function can help aid the organisation's ability to withstand unforeseen supply chain disruptions.

In an increasingly uncertain world where the next big crisis could always be around the corner, internal audit's ability to provide assurance and assess the potential risks posed by supply chain disruption is a valuable skill set to possess. This report explores how internal auditors can help their organisations build more resilient, secure and diverse supply chains, reducing their exposure to risk and increasing their ability to respond to unexpected events.

This report looks to explore three key themes relating to supply chain resilience and security. Firstly, we investigate how organisations identify and manage supply chain risks and how internal audit can help improve this process. Secondly, the report examines what strategies organisations and internal audit teams can deploy to tackle the risks in the supply chain. Finally, we explore how organisations and internal audit can use collaboration tools and leverage technology to reduce and mitigate the impacts of supply chain risks.

These themes encompass risk management, diversification and onshoring strategies, collaboration with suppliers, and the strategic use of technology and data analytics.

To produce this piece, we held meetings with internal audit professionals from industries that are heavily reliant on global supply chains. We held a roundtable in September 2023 with Chief Audit Executives (CAEs), audit committee chairs and professionals with a background in supply chain risk and internal audit. We also held several one-to-one interviews to gain further insights on this topic. The quotes used throughout this report are taken from those meetings and other discussions about supply chain resilience and security.

Anne Kiem OBE
Chief Executive, Chartered Institute of Internal Auditors

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Introduction

In a world characterised by unrelenting change and uncertainty, the resilience and security of global supply chains have emerged as the foundation of success for those organisations that rely on them. Over the past three years, the dynamics of supply chain risks have been reshaped by a confluence of factors, including geopolitical upheavals, climate-related extreme weather events, technological advances, and unexpected global crises. Internal auditors are uniquely positioned to assess the robustness of supply chain strategies and can assess if they are resilient enough to withstand such global crises.

The COVID-19 pandemic laid bare the vulnerabilities inherent in all supply chain models, causing widespread disruptions and illuminating the need for robust risk management strategies. This event did not create the need for supply chain risk management but exposed the limitations of existing frameworks in an increasingly interconnected world. The pandemic's impact was multifaceted, leading to shortages of essential goods and highlighting the interconnected nature of global supply chains.

In 2023, these challenges have been compounded by ongoing geopolitical tensions. 46% of CEOs are considering adjusting their supply chains to mitigate against exposure to geopolitical conflict within the next 12 months¹. The ongoing tensions caused by the war in Ukraine has not only disrupted regional trade but also had a ripple effect on global supply chains, particularly in the energy and agricultural sectors. Sanctions and trade barriers have necessitated the reconfiguration of supply routes and sourcing strategies, underlining the importance of agile and adaptable supply chain models. Internal audit plays a role in providing assurance that any adjustments to the supply chain risk management processes and procedures are both effective and aligned with organisational risk appetite.

Furthermore, cyberattacks are a growing threat to organisations of all sizes, and ransomware supply chain attacks have become more frequent and more severe. In June 2023, the attack on third-party software provider MOVEit targeted users of the MOVEit Transfer tool. MOVEit is designed to transfer sensitive files securely and is particularly popular in The US. The attackers managed to compromise more than 620 organisations, including the BBC, British Airways, Boots, and Aer Lingus². Such incidents underline the need for robust cybersecurity measures and the importance of integrating these considerations into overall supply chain risk management strategies. It also amplifies the need for internal audit to actively engage in cybersecurity governance and supply chain processes, as their recommendations can help further fortify digital defences.

Economic factors also continue to play a significant role. The ongoing challenges of inflation and energy price volatility throughout 2023 have further complicated supply chain risk management. Organisations are finding themselves navigating the delicate balance between cost-efficiency and resilience, a task made more challenging by these economic pressures.

¹PwC 26th CEO Survey, PwC. [🔗](#)

²MOVEit hack: BBC, BA and Boots among cyber-attack victims, BBC. [🔗](#)

Additionally, demographic shifts such as an ageing workforce and evolving labour market dynamics, such as the HGV driver shortage crisis, have raised resourcing concerns and the ability to maintain uninterrupted supply chain operations. These factors, coupled with the increasing emphasis on sustainability and Environmental, Social, and Governance (ESG) considerations are driving organisations to rethink and transform their supply chain strategies. The advent of advanced technologies offer promising solutions but also introduces new vulnerabilities. The shortage of digital expertise within many organisations leaves them exposed to potential cyberattacks, making it imperative to bolster digital defences. This shortage of digital expertise is

also impacting internal audit functions as the profession seeks to upskill in this area.

This report aims to provide a comprehensive analysis of these multifaceted challenges. We explore how organisations can proactively identify, manage, and mitigate supply chain risks, and leverage technology and use innovative strategies to enhance resilience. It shines a light on how the internal audit function can offer insights and guidance to strengthen security measures and help aid the continuity of operations amidst an unpredictable global landscape.



Identifying and Managing Supply Chain Security Risks in a Dynamic Landscape



Effective risk identification is the cornerstone of a resilient supply chain. It enables organisations to anticipate and prepare for potential disruptions, thereby maintaining continuity and securing a competitive edge. The process goes beyond mere recognition of possible risks; it involves a deep understanding of the intricate interdependencies within the supply chain and the external factors that can impact the organisation.

Identifying and managing supply chain risks is not a one-time activity but a continuous process that adapts to changing circumstances. It involves systematically analysing various aspects of the supply chain, including suppliers, logistics, regulatory environments, and market dynamics. By identifying risks early, organisations can implement strategies to mitigate them before they escalate into major disruptions. This proactive approach is required in today's business environment, where supply chain disruptions can have far-reaching consequences, not just operationally but also financially and reputationally.

Categorising and prioritising risks is a fundamental step in the supply chain risk management process. By classifying supply chain risks into distinct categories, organisations can gain a clearer understanding of the nature and severity of different types of risks and how they impact the organisation. Supply chain risks can be broadly classified into five categories: strategic, operational, financial, compliance, and reputational.

Here is a breakdown of these risk categories:

Strategic Risks: These risks are related to long-term decisions and strategies of the organisation. They could stem from changes in market trends, technological advancements, or shifts in consumer preferences. For example, the increasing price of fuel has seen logistics companies switching to an all-electric fleet while the growing consumer demands for sustainable products have prompted organisations to think about their carbon footprint throughout their supply chains.

Operational Risks: These include risks associated with day-to-day activities and processes within the supply chain. These could be logistical issues, supplier disruptions, quality control failures, and technology breakdowns. HGV driver and mechanic shortages causing logistical havoc across the UK's supply chain³ is an example of how operational risks can bring supply chains to a standstill.

Financial Risks: These involve risks that impact the financial health of the organisation. They include currency fluctuations, changes in commodity prices, and other cost volatility. The rising prices of wheat and other commodities due to global conflicts and weather impacts have caused food prices to increase around the world. The rising cost of shipping and other logistics has put pressure on businesses to find ways to reduce other costs, and all have an impact on the organisation's supply chain.

Compliance Risks: Compliance risks arise from the need to adhere to laws, regulations, and standards. These risks pose significant challenges to the security and resilience of global supply chains. With the introduction of stringent environmental and labour laws in China and India respectively, along with the complex international trade disputes like the US-China trade war, organisations are now scrambling to comply with new regulations while trying to maintain an uninterrupted flow of goods. This has not only disrupted supply chain efficiency but also created vulnerabilities in supply chain security, leading to increased operational costs and further uncertainties.

³Shortage of HGV mechanics threatens UK supply chains, warns sector, Financial Times. [L2](#)

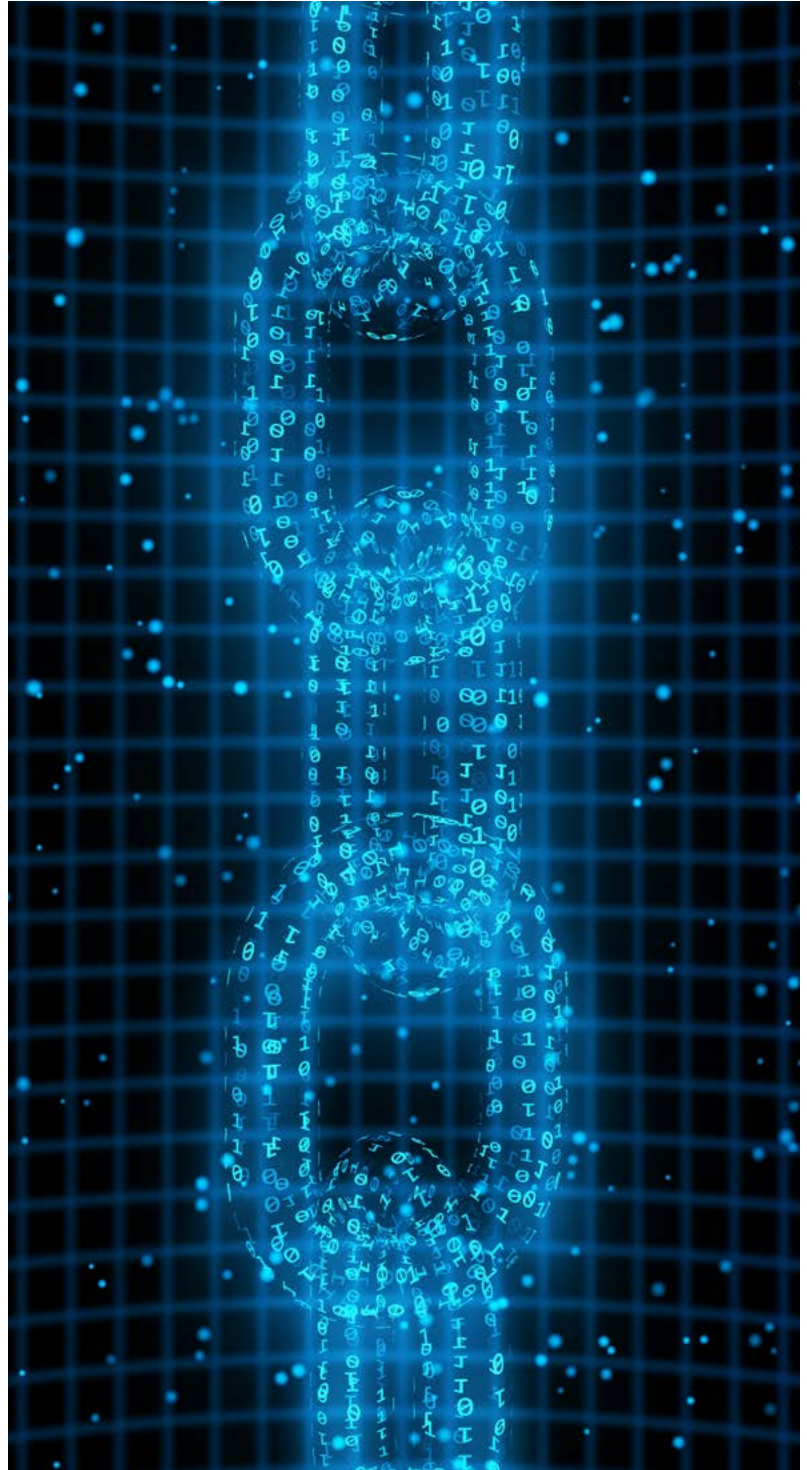
Reputational Risks: These are risks that can affect the public perception of the organisation. They can be triggered by various factors, such as product recalls, ethical concerns in the supply chain, or data breaches. An example of reputational risks being exacerbated due to supply chain disruption is when fast food giant KFC grabbed major headlines as they faced widespread closures in 2018 due to a chicken delivery supply chain issue⁴.

This supply chain risk categorisation process can enhance risk awareness, improve risk assessments, optimise resource allocation for risk mitigation, promote a proactive risk management approach, and facilitate informed decision-making. These benefits collectively contribute to safeguarding operations, enhancing resilience, and achieving strategic objectives.

Supply Chain Transparency

Supply chain transparency has now emerged as a critical issue for organisations globally. We have seen a convergence of challenges, including geopolitical tensions, regulatory pressures, skills shortages, and climate change, all posing significant threats to supply chain operations. The pandemic's disruptions, marked by lockdowns and labour shortages, forced many businesses to scramble for alternative partners, underscoring the importance of visibility across the entire supply chain, especially when dealing with multiple partners and countries. Supply chain transparency is a double-edged sword when it comes to supply chain security and resilience; on one hand, it enables organisations to pinpoint vulnerabilities and compliance issues in real time, leading to more proactive risk management. On the other hand, increased transparency can potentially expose sensitive supply chain details, posing a risk if this information falls into the wrong hands, thus requiring careful management of what is shared and with whom. Internal audit functions can provide an objective assessment of transparency practices which can lead to effective supply chain transparency.

This can contribute to gaining operational insights to improve supply chain resilience and security while protecting sensitive supply chain information from cybersecurity threats.



⁴KFC and the Supply Chain Fail, FCSI. [Link](#)

Internal Audit: A Strategic Eye on Supply Chain Risks

Internal audit can help safeguard an organisation's supply chain against potential disruptions and support its overall resilience. Internal auditors can provide an independent and objective assessment of current risk management practices and identify areas for improvement within the supply chain. This valuable oversight helps organisations proactively mitigate risks, minimise disruptions, and maintain business continuity.

Here are some key ways internal audit can identify supply chain risks:

Risk Assessment: Internal audit can conduct risk assessments to identify potential supply chain risks and vulnerabilities. By analysing historical data, current processes, and plans to pinpoint areas where risks may arise. This process may involve evaluating the effectiveness of risk mitigation strategies and identifying areas for improvement.

Cybersecurity Audits: To protect the organisation's supply chain from cybersecurity risks, internal audit can conduct regular assessments of the organisation's cybersecurity measures. Scrutinising the effectiveness of security policies, the vulnerability of supply chain systems, and the organisation's ability to detect and respond to cyber threats they make recommendations for strengthening the organisation's cybersecurity posture.

Supply Chain Resilience Testing: Internal audit can assist in testing and validating supply chain resilience plans. This involves conducting scenario-based simulations and stress-testing exercises to evaluate the organisation's ability to respond to various disruptions. By stress-testing resilience plans, internal audit helps organisations prepare to respond effectively to supply chain disruptions. This includes evaluating the robustness of backup suppliers, logistics alternatives, and emergency response protocols.

Compliance Oversight: Internal audit can aid organisations in complying with relevant regulations and standards. Reviewing policies, procedures, and practices to confirm adherence to legal and regulatory requirements reduces

the risk of legal and regulatory challenges within the supply chain. They can also recommend adjustments to processes to enhance compliance.

Operational Audits: Internal audit can delve into the operational aspects of the supply chain by scrutinising the end-to-end processes, from procurement to delivery. This involves analysing process efficiency, resource allocation, and risk management measures. By identifying operational bottlenecks and areas of inefficiency, internal audit can help organisations improve their supply chain operations.



Monitoring Supplier Performance: Establish a comprehensive system of Key Risk Indicators (KRIs) to proactively identify, monitor, and assess supply chain risks. This system should encompass a range of metrics, including inventory levels, supplier performance, transportation delays, cybersecurity vulnerabilities, and regulatory compliance. Once a supplier is onboarded, look at these KRIs not only from the perspective of the level of service but also from the financial stability point of view.

Conducting a trend analysis of a supplier's delivery timeliness and checking if past orders were late or not fulfilled are great indicators that there may be a financial challenge or other looming risks with suppliers.

Regular supplier audits and conducting site visits may be necessary. Through this trend analysis, internal audit can look at past incidents to see if there are challenges with the supplier and can flag this as a long-term risk to the Board. They can also regularly review and update KRIs to reflect evolving supply chain dynamics and potential disruptions.

Risk Registers: Internal audit needs to work with other functions in the 1st and 2nd line to establish and maintain comprehensive risk registers that document and categorise potential supply chain risks. This includes their impact, likelihood, and any potential mitigation strategies. This also involves systematically identifying and classifying risks such as supplier disruptions, demand fluctuations, and geopolitical issues. Internal audit can provide valuable support in establishing and maintaining comprehensive risk registers by conducting independent assessments of risk identification processes, whereby the adequacy of risk categorisation and the effectiveness of risk mitigation strategies are evaluated.

Organisations recognising and managing supply chain risks need to improve their supply chain's security and resilience. Internal audit can contribute significantly to this process. By identifying various types of risks and flagging them to senior management and the Board, internal audit can help organisations promote a robust, secure, and resilient supply chain.

“You need to find the clusters and pressure points in your supply chain, then look at the entire path along the supply chain and look at where everything pieces together”

Chief Auditor – Global Consumer Packaged Goods Company

“Within supply chains, understanding the risk and where it will impact the business is the key”

Preetha Kumar - Associate Director - Technology and Risk Assurance – AuditOne (NHS)

“We’ve had to think more strategically and long-term about the supply chain. There is a need for a more proactive approach rather than reactive when managing supply chain risks. The longer it takes to identify the risk, the harder it becomes and the more costly it becomes”

Head of Risk and Audit – Major Supermarket



Strategies for Fortifying Supply Chain Security and Resilience



The intricate web of supply chains crisscrossing the globe has now become the backbone of global commerce. Yet, recent years have revealed inherent vulnerabilities in these supply chains, leading organisations to reevaluate their strategies and adopt proactive measures to safeguard against disruptions. The need for robust supply chains has never been more apparent and organisations have been compelled to reassess and fortify the security and resilience of their supply chains. This strategic shift is evident in various approaches adopted by companies across industries, each tailored to mitigate specific vulnerabilities and align with broader corporate objectives.

Diversification Strategies

One prevalent strategy is diversification. We have seen technology giants like Apple and HP demonstrate geographical diversification strategies within their supply chains. Apple has initiated the transition of some of its production facilities from China to India, a move aimed at reducing reliance on a single region and spreading risk⁵. Another diversification strategy being employed is to reduce the reliance on a single supplier and increase the range of suppliers for critical materials. Car Manufacturer Tesla recently signed a long-term supply agreement with Vale for the supply of nickel for its batteries. With this agreement in place, Tesla has a total of seven nickel suppliers, spread across multiple regions⁶.

Localisation Strategies

A strategy gaining momentum is onshoring or reshoring. For example, in the automotive industry, General Motors is investing in domestic battery production and mining facilities in the United States⁷. This shift not only secures a domestic supply of critical components but by manufacturing domestically, it also addresses the sustainability concerns of long-distance transportation and nullifies the geopolitical global risk exposure from sourcing abroad⁸. Similarly, HP is expanding its manufacturing base to include locations like Mexico, enabling the company to buffer against potential disruptions and leverage the benefits of localised supply chains⁹.

Utilising Technology

The integration of advanced digital technologies is revolutionising supply chain management. Companies are employing tools like blockchain, artificial intelligence, and the Internet of Things (IoT) for enhanced visibility and responsiveness. In the pharmaceutical industry, firms like Pfizer have used advanced tracking systems to ensure the integrity of temperature-sensitive products like COVID-19 vaccines, demonstrating the value of technological integration in managing complex supply chains¹⁰. Sports goods company Nike accelerated a supply chain technology program utilising radio frequency identification (RFID) technology to track products through outsourced manufacturing operations. The company employed predictive-demand analytics to lessen the impact of store closures in China. This approach enabled Nike to boost sales while its major competitors experienced more significant drops in sales¹¹.

These strategies signify that organisations are taking a comprehensive approach to supply chain resilience. Internal audit offers oversight and insights into potential risks and provides assurance on the effectiveness of these strategies. Internal audit recommendations can help the strategic adjustments made by organisations so they are not only responsive to current challenges but also sustainable and aligned with long-term organisational goals.

⁵Phone maker Foxconn's cautious pivot to India shows limits of 'China plus one', Financial Times. [🔗](#)

⁶Tesla signed secret nickel supply deal with Vale, Reuters. [🔗](#)

⁷General Motors invests \$650mn in US lithium mine to secure EV battery materials, Financial Times. [🔗](#)

⁸GM Plans Biggest Manufacturing Investment Ever In Its Home State For EV, Battery Production, Forbes. [🔗](#)

⁹HP to move production of millions of PCs to Thailand, Mexico, NIKKEI Asia. [🔗](#)

¹⁰Tracking Technologies Safeguard Vaccine Cold Chain, Pharma Tech. [🔗](#)

¹¹Future-proofing the supply chain, McKinsey & Company. [🔗](#)

Internal Audit's Role in Fortifying these Supply Chain Security Strategies

Organisations that embrace comprehensive supply chain security strategies and leverage the expertise of internal audit will be better positioned to navigate the complex and evolving challenges that lie ahead. The strategies outlined here represent a wide range of approaches that can enhance supply chain security and resilience, enabling organisations to identify, assess, and mitigate risks while ensuring business continuity.

Diversification and Dual-sourcing of Suppliers: Organisations are increasingly diversifying their supplier bases and embracing local sourcing strategies to mitigate the risks associated with relying on a single source or a limited number of suppliers for critical components or products. This shift in approach reduces the organisation's vulnerability to disruptions originating from a single geographical location and enhances supply chain resilience. Dual sourcing, the practice of maintaining two or more suppliers for critical items, further strengthens supply chain resilience by ensuring that if one supplier faces challenges, an alternative source is readily available. Organisations are also recognising the need for alternative sources of critical raw materials and components, which can further reduce their reliance on specific suppliers or regions. Internal audit teams can help evaluate the effectiveness of these strategies. By assessing the organisation's risk assessments, supplier portfolios, and the overall execution of these strategies, internal audit helps the organisation achieve its intended objectives. This includes evaluating the organisation's ability to identify and prioritise critical suppliers, establish clear selection criteria for new suppliers, and effectively manage supplier relationships.

Criticality Assessments: Criticality assessments help organisations identify crucial materials and assess their availability. By understanding the potential impact of disruptions to critical supplies, organisations can prioritise their efforts to secure essential materials and implement appropriate risk mitigation strategies. Internal audit can evaluate criticality assessments to determine if they are fit for purpose and recommend actions to strengthen these assessments.

Contractual Safeguards: Strong contractual safeguards such as escrow agreements provide organisations with protection during supply chain disruptions. Escrow agreements are financial arrangements where a third party holds and regulates payment of the funds required for two parties involved in a transaction, ensuring that the terms of the deal are met before the payment is released. This mechanism provides a layer of security in transactions, mitigating risk and enhancing trust between suppliers and buyers in complex supply chains. During the early days of the COVID-19 pandemic, organisations with robust contractual agreements in place were better positioned to secure essential supplies. Contractual safeguards provide a safety net for organisations, ensuring the availability of critical supplies, even in the face of supplier challenges. Internal audit can examine the strength and adequacy of contractual safeguards. It can assess the organisation's ability to enforce these agreements when needed so that they are regularly reviewed and updated.

Supply Chain Mapping: Organisations are increasingly using supply chain mapping software to gain visibility into their supply chain structures. This enables them to identify vulnerabilities, dependencies, and critical components.



Pharmaceutical companies utilise supply chain mapping exercises to identify critical ingredients and dependencies, ensuring a steady supply of materials. By creating detailed supply chain maps and conducting comprehensive risk assessments, organisations can pinpoint areas of potential disruption and develop targeted mitigation plans. Internal audit can verify the accuracy and completeness of supply chain maps and assess the effectiveness of risk assessments. It can help with adequately identifying critical components and dependencies and setting mitigation plans in place.

Scenario Planning and Criticality Assessment:

As supply chain disruptions become increasingly prevalent, organisations are turning to scenario planning as a proactive approach to risk management. By simulating potential disruptions, organisations can identify vulnerabilities, develop contingency plans, and enhance their overall resilience. Effective scenario planning involves identifying potential disruptions, developing and testing detailed scenarios, assessing organisational resilience, formulating response strategies, and regularly reviewing and updating scenarios. By implementing scenario planning, organisations can strengthen resilience to disruptions, improve decision-making, enhance business continuity, and foster a risk-aware culture. Internal audit can assess the effectiveness of scenario planning initiatives and support organisations in maximising the value of this exercise.

Just-in-Case Approach and Building Redundancy:

Organisations can adopt a “just-in-case” approach by identifying critical supply chain points and building redundancy in those areas. This approach involves stockpiling inventory, and provides a safety net for organisations, allowing them to weather disruptions by maintaining backup inventory and diversified supplier networks. Internal audit can assess the effectiveness of the just-in-case approach and ensure that any redundancy plans are well-documented and regularly reviewed.

Digitalisation and Supply Chain Analytics: The adoption of supply chain analytics technology and the recruitment of digital talent are essential steps in improving supply chain transparency and resilience. These digital tools enable organisations to proactively monitor and respond to potential disruptions. Retailers are using advanced analytics

to monitor consumer demand patterns and optimise inventory levels, ensuring products are available when and where they are needed. By leveraging digital technologies, organisations gain realtime visibility into their supply chains. They can predict and mitigate disruptions, enhancing overall resilience. Internal audit can assess the organisation’s adoption of digital supply chain tools and the effectiveness of supply chain analytics. It can develop measures that demonstrate technology investments adequately align with supply chain resilience goals and that data security and privacy measures are in place. We will explore this topic further in the next part of this report.

“It’s important to try to work with the right mix of partners that can be as nimble and agile as we need them to be. They need to be the best in class when managing unexpected risks such as the Covid-19 pandemic or the Suez Canal blockage”

Head of Risk and Audit – Major Supermarket

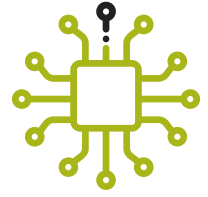
“Having the supplier contractual terms clarified to ensure the right security clauses and the right levels of audits are in there is key. Then ensuring that the security practices and procedures are aligned so we can ensure we are not exposing ourselves to any more threats and vulnerabilities”

Preetha Kumar - Associate Director - Technology and Risk Assurance – AuditOne (NHS)

“How many unique supply chain points do you have? If you find you have a single supply in those areas, you have to challenge this. If this supplier weren’t suddenly available, you need to consider what would happen”

Chief Auditor – Global Consumer Packaged Goods Company

Leveraging Technology: Developing Digitally Enhanced Supply Chains



Investing more in the digital transformation of the supply chain is a step that organisations can take to anticipate disruptions more accurately, allowing for prompt risk mitigation decisions. Organisations' readiness for technological transformation varies and is influenced by their risk appetite, finances, and current operational model. For organisations being heavily impacted by supply chain risks, they might be in firefighting mode, prioritising immediate concerns over long-term digital strategies. Other organisations impacted by supply chain risks may be financially constrained, limiting their ability to invest heavily in new technologies. Understanding the organisation's cultural readiness to embrace technological change is needed for tailoring a transformation strategy that aligns with its specific needs and capabilities.

The impetus for supply chain digital transformation must originate from the top. Senior leadership must recognise the role of digital integration in supply chain risk management and foster a culture that embraces technological innovation. To facilitate the adoption of transformative technologies, teams working closely within supply chain operations must secure buy-in from management and Boards, ensuring adequate investment in digital infrastructure, and fostering a supportive environment for the adoption of new technologies.

Once implemented, the effectiveness of technology-driven supply chain solutions depends on the organisation's existing

infrastructure. Assessing the interoperability of existing systems and the ease of integrating new technologies is necessary. If the current infrastructure cannot manage the demands of new technologies, there will be limitations on the organisation's ability to leverage these advancements effectively. By incorporating technology and data analytics into supply chain risk management processes, internal audit professionals can help organisations improve their effectiveness and reduce their exposure to supply chain risks. Internal audit can challenge the organisation to make sure the business is not being complacent in this area and is constantly looking for an opportunity to improve.



How Organisations and Internal Audit Can Leverage Technology

Organisations that embrace comprehensive supply chain security strategies and leverage the expertise of internal audit will be better positioned to navigate the complex and evolving challenges that lie ahead. The strategies outlined here represent a wide range of approaches that can enhance supply chain security and resilience, enabling organisations to identify, assess, and mitigate risks while ensuring business continuity.

Collaboration Tools with Suppliers: Forming strong relationships with suppliers is essential for building a resilient supply chain. When organisations have strong relationships with their suppliers, they are better able to communicate their needs, identify and address potential risks, and collaborate on solutions. Leveraging technology to enhance this collaboration with suppliers can play an important role in ensuring effective communication. Implementing supplier portals or automated order management systems can be used to share information and documents with suppliers securely and efficiently. This can help to improve communication and collaboration, and to reduce the risks, especially in extremely complex supply chains. Organisations can use these tools to track supplier performance, manage contracts, and collaborate on risk management. Internal auditors can use these tools to identify and manage supply chain risks by analysing historical data on supplier performance, previous supply disruptions, and financial issues to identify trends and patterns in behaviour by particular suppliers. Internal audit can also use this opportunity to provide continuous assurance in this area. Collaboration tools and technology can help organisations to improve their visibility into their supply chains. This can help them to identify and assess risks, and to make better decisions about where to source goods and services.

Leverage Predictive Analytics: Predictive analytics-based artificial intelligence solutions can be used to analyse vast amounts of data, including historical trends, real time market conditions, and external factors. This tool can help identify patterns and predict future supply chain risk events. This capability can be employed further to forecast demand fluctuations, anticipate potential supply chain disruptions, and optimise inventory levels to meet customer

demand while minimising overstocking. Digital twins are virtual representations of physical objects or systems that are synchronised with their real-world counterparts in real time. They are created using a combination of data from sensors, IoT devices, and enterprise systems. This data is then used to create a detailed model of the physical object or system, which can be used to simulate different scenarios and predict the impact of changes. For example, a large retailer uses a digital twin to simulate the impact of an increase in demand during the festive period on its supply chain. The retailer uses the digital twin to model the expected demand for its products, the availability of inventory, and the capacity of its transportation network. Internal auditors can assess the adequacy of data governance practices, data quality, and model development processes and evaluate the reliability and accuracy of predictive analytics insights. Additionally, internal auditors can evaluate the integration of predictive analytics into supply chain decision-making processes and identify opportunities to further enhance its effectiveness.

Training and Upskilling for Technological Adoption: Technological change in supply chain management requires a workforce that is equipped with the necessary skills and knowledge. Organisations must identify training needs across all levels of the organisation and provide comprehensive training programs to prepare employees for the adoption of new technologies. Upskilling relevant resources involved in supply chains is needed to oversee a smooth and successful transition. The ability to extract meaningful insights from data is required to effectively leverage technology in the supply chain and improve supply chain security and resilience. Organisations, if they are capable, should invest in data analytics expertise, whether through upskilling existing employees or hiring data scientists or data analysts. These experts should possess the skills to interpret data accurately and turn it into actionable insights that drive supply chain improvements.



Enhancing Cybersecurity: Organisations will need to be mindful of hostile attacks against their supply chain. Technology has improved the transparency, resilience, and efficiency of supply chains, but digitisation of supply chains comes with the significant risk of attack by increasingly sophisticated hackers and cyber criminals. Threats can now infiltrate through technology and spread malicious ransomware that could jeopardise the security of the organisation. Data is the foundation of data-driven decision-making in supply chain management. Organisations must ensure the availability of relevant data, considering data privacy regulations such as GDPR and data security guidelines. The accuracy and completeness of data are paramount for reliable insights and informed decision-making. This necessitates robust data governance practices and data quality management processes, all of which internal audit can review.

Data Governance: Effective data governance plays a part in supply chain resilience. By establishing clear policies and procedures, organisations can ensure the integrity, security, and accessibility of their data assets, fostering a robust and resilient supply chain. Data governance facilitates supply chain visibility, enabling organisations to track shipments, identify potential disruptions, and make informed decisions to mitigate risks. It also promotes data accuracy and reliability, providing organisations with a solid foundation for analytics and informed decision-making, leading to improved efficiency and customer satisfaction. Internal audit can assess data governance policies and procedures, scrutinise

data handling practices, evaluate data security controls, and recommend improvements to enhance supply chain data resilience. By working in tandem, organisations and internal auditors can strengthen data governance, bolstering supply chain security and resilience.

“Having the right data and digital strategy in an organisation and understanding this as an assurance provider. Is this strategy really leveraging the right technology and is it taking inputs from all functions through the business? The supply chain needs to be mapped end to end”

Preetha Kumar - Associate Director - Technology and Risk Assurance - AuditOne (NHS)

“More than just building the technology, you need to build the skill set of internal auditors to ensure they know how to use these tools when they want to audit supply chain. No matter how powerful the technology, if you don't know how to use it doesn't help”

Preetha Kumar - Associate Director - Technology and Risk Assurance - AuditOne (NHS)



Conclusion

As we navigate the evolving landscape of supply chain risks, it's increasingly clear that proactive, informed strategies are needed for resilience in this dynamic environment. This journey is not just about managing challenges; it's about seizing opportunities to innovate and strengthen supply chains against future disruptions.

At the core of this transformation is the need for robust, cross-functional collaboration. This goes beyond the realms of internal audit, extending to suppliers, partners, and regulatory bodies, and building a resilient network capable of adeptly managing supply chain risks. Internal auditors can help protect the integrity of the supply chain so that strategies remain agile, adaptive, and aligned with emerging threats and opportunities. Internal audit's insights and oversight enable organisations to refine strategies in real time, preserving the resilience and integrity of supply chains.

Internal auditors are embracing a transformative shift from risk assessors to strategic partner, providing assurance on the effectiveness of diverse strategies to solidify supply chain resilience. By blending insights from various departments, internal auditors foster the holistic approach that every facet of the supply chain is robust and responsive. In an era marked by rapid technological advancements and regulatory shifts, internal auditors' skills in risk management and compliance are invaluable. Their strategic insights not only safeguard organisations against disruptions but also propel a culture of adaptability and continuous improvement.

Emphasising this, the development of internal audit professionals, especially in technology and data analytics, is not just a necessity but a strategic imperative. This upskilling enables auditors to transcend traditional compliance roles, offering strategic insights that reinforce organisational resilience and security. The adoption of technology in supply chains is not just an option but a necessity. Digital tools empower auditors with enhanced analytical capabilities needed for navigating the complexities of modern supply chains. As organisations embrace digital transformation, internal audit's role in guiding and supporting this journey becomes increasingly significant.

This report not only reflects the current state of supply chain management but also aims to inspire and guide organisations towards a future where supply chains are not just efficient but are also resilient and secure. This vision for the future is not merely a response to emerging trends but a commitment to effective risk management in the supply chain – a commitment that internal audit functions are uniquely positioned to support.



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The Chartered Institute of Internal Auditors is the only professional body dedicated exclusively to training, supporting and representing internal auditors in the UK and Ireland.

We have 10,000 members in all sectors of the economy. First established in 1948, we obtained our Royal Charter in 2010.

Over 2,000 members are Chartered Internal Auditors and have earned the designation CMIIA. About 1,000 of our members hold the position of head of internal audit and the majority of FTSE 100 companies are represented among our membership.

Members are part of a global network of over 204,000 members in 170 countries, all working to the same International Standards and Code of Ethics.

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About AuditBoard

AuditBoard is the leading cloud-based platform transforming audit, risk, and compliance management. More than 40% of the Fortune 500 leverage AuditBoard to move their businesses forward with greater clarity and agility.

AuditBoard is top-rated by customers on G2, Capterra, and Gartner Peer Insights, and was recently ranked for the fifth year in a row as one of the fastest-growing technology companies in North America by Deloitte.

To learn more, visit:
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