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THE NEXT FRONTIER: AI-DRIVEN PROCUREMENT IN AN ERA OF TRADE WARS AND CYBER THREATS

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Keywords: Artificial intelligence, Procurement, Trade Wars, Cyber Threats.

1. INTRODUCTION

The global procurement landscape is undergoing a significant transformation. What was once primarily a transactional, cost-focused function has evolved into a strategic pillar, essential for organizational resilience and competitive advantage, and is heavily influenced by artificial intelligence (AI) (Jones, 2023). A confluence of global forces drives this transformation: escalating trade wars, shifting geopolitical alliances, and a surge in sophisticated cyber threats targeting supply chains. These challenges have exposed vulnerabilities in even the most robust procurement systems, underscoring the urgent need for new approaches to risk management and agility (Mizgier, 2024).

Amidst this turbulence, AI is emerging as a transformative force in procurement, according to Van Hoek (2024), despite actual adoption levels remaining low and organizations facing significant barriers to widespread implementation. The author states that, while there is strong interest and clear potential, most procurement functions are still in early stages of experimenting with or piloting AI solutions, rather than having fully integrated, mature systems. While procurement lags, other areas of supply chain management are experiencing more rapid AI advancement. As highlighted by Cooper (2024), the widespread adoption of advanced AI technologies is catalyzing the digitalization of supply chain management, enabling real-time visibility and predictive analytics that were previously unattainable. AI-driven solutions are now empowering organizations to anticipate disruptions, optimize sourcing strategies, and safeguard critical supply lines (Hannibal, Modgil, & Singh, 2021). The widespread adoption of advanced AI technologies is accelerating the digitalization of supply chain management, providing real-time visibility and predictive analytics that were previously unattainable (Rane et al., 2024; Pandey et al., 2024). Furthermore, the trade war has significantly impacted buyer-supplier relationships, with Yiu, Cui, and Fan (2024) finding adverse yet variable effects, where some firms have managed to mitigate these impacts through innovation and other strategic measures.

Cybersecurity has become a primary concern in procurement as companies increasingly rely on digital supply chains. A significant number of cyberattacks originate from third-party vulnerabilities, underscoring the risks in supplier networks. Alongside supply chain disruptions and political instability, cyber threats rank among the top challenges for procurement professionals. To address these issues, organizations must prioritize strong cyber hygiene and deepen their understanding of procurement risks. Doing so is essential to protect operations and maintain a competitive edge in an increasingly complex and digital business environment.

The focus of this article is on how AI is being deployed in procurement to address the dual pressures of trade wars and cyber threats (Shamsuddoha et al., 2025). We will explore the specific applications of AI in procurement, the opportunities it creates for greater resilience and efficiency, and the limitations and risks that must be managed along the way. This focus is particularly relevant as global supply chains become increasingly interconnected and digitalized,

amplifying the risks associated with geopolitical tensions and cyberattacks (Pandey et al., 2024; Osman & El-Gendy, 2024).

The relevance of this theme is clear: organizations that fail to adapt may face supply disruptions, financial losses, and reputational damage, while those that embrace AI-driven procurement stand to gain a critical edge in agility, security, and competitiveness (Pandey et al., 2024; World Economic Forum, 2025).

The deployment of AI systems without robust due diligence and transparency can pose significant challenges, necessitating AI-specific procurement guidelines to protect fundamental rights and ensure ethical practices (Hickok, 2022).

This leads us to the central problem question: How can organizations leverage AI-driven procurement to navigate the complexities of trade wars and cyber threats, ensuring both operational resilience and strategic advantage in an increasingly uncertain world?

By examining this question, the study aims to understand how AI is transforming procurement into a strategic lever for value extraction and resilience, while also examining how this transformation intersects with the challenges posed by volatile trade policies and cyber threats. It intends to provide procurement leaders, technology strategists, and business executives with actionable insights into the next frontier of procurement, one where AI is not just a tool, but a strategic imperative for survival and growth. The combined pressures of dynamic geopolitical events and evolving cyber risks have created an environment where intelligent, adaptive procurement practices are not only advantageous but also essential.

Research on the application of artificial intelligence (AI) in procurement and supply chain management (SCM) from 2020 to 2025 has concentrated on several key areas. AI technologies are being increasingly adopted to enhance supply chain visibility, optimize inventory management, and improve demand forecasting, particularly in sectors such as e-commerce. Studies have highlighted AI's transformative role in promoting sustainable business practices and resilience within supply chains, addressing challenges posed by disruptions such as the COVID-19 pandemic.

Additionally, ongoing research seeks to understand the impact of AI on SCM performance, including the identification of specific applications and benefits of AI in this field. However, information is missing on specific academic studies published between 2020 and 2025 that comprehensively detail these advancements.

After the Introduction, follows the theoretical basis, the methodology, findings, and discussion

2. THEORETICAL BASIS

Artificial intelligence (AI) emerges as a transformative force and a key strategic pillar for organizational resilience and competitive advantage. Its proliferation necessitates a discussion about the importance of regulatory harmonization, as it can exacerbate inequalities between developed and developing countries, potentially leading to discriminatory trade practices (Khan, 2024). Developed countries can optimize their supply chains with the aid of AI, whereas developing countries face challenges due to a lack of technological infrastructure and resources.

Far from being limited to automating routine tasks, AI-powered solutions now enable organizations to anticipate disruptions, optimize procurement strategies, and safeguard critical supply lines, thereby catalyzing the digitization of supply chain management and providing

real-time visibility and predictive analytics that were previously unattainable. This section lays the conceptual groundwork for understanding the complex impact of AI on the procurement industry. Understanding these elements is crucial for informed decision-making in the face of complex and volatile trade policies and cyber threats.

In this context, this theoretical basis outlines how AI is transforming procurement operations, risk management, trade secret protection, and trade policy strategies, offering a framework to leverage AI-driven procurement for enhanced operational resilience and strategic advantage.

The following subsection explores how AI is being strategically integrated into procurement processes, transforming procurement functions from decision optimization to inventory management. AI overcomes historical inefficiencies and data fragmentation, enabling teams to focus on high-value, strategic activities and redefine procurement operating models.

2.1. Integration of Artificial Intelligence in Procurement

AI revolutionizes risk management in global supply chains by offering predictive capabilities and real-time visibility. It transforms reactive approaches into proactive strategies to address geopolitical tensions, natural disasters, and technological disruptions, making it essential for operational resilience in volatile contexts.

While Yeldan, Yılmaz, and Kayatürk (2024) highlight AI's transformative potential in optimizing procurement decisions, inventory management, and overall supply chain agility, Obinna and Momoh (2024) provide empirical evidence of AI's widespread adoption and tangible benefits in organizational procurement processes. Their findings—showing high adoption rates (80%) and satisfaction levels (75%) in areas like spend analysis, supplier selection, and contract management—demonstrate how AI is already enhancing transparency, accountability, and operational efficiency in practice.

Building on these insights, Yekeen, Ewim, and Sam-Bulya (2024) take the discussion a step further by advocating for the combined power of AI and blockchain technologies. They argue that this dual integration is critical for achieving not only efficiency and transparency but also security and resilience in procurement, equipping businesses with a comprehensive framework to address future supply chain challenges.

AI revolutionizes risk management in global supply chains by offering predictive capabilities and real-time visibility. The following section will analyze how AI transforms reactive approaches into proactive strategies to address geopolitical tensions, natural disasters, and technological disruptions, making it essential for operational resilience in volatile contexts.

2.2. Risk Management in Procurement

While Nwamekwe & Igbokwe (2024) categorize risks into external (e.g., geopolitical instability, natural disasters) and internal (e.g., operational inefficiencies, supplier failures) factors, emphasizing the need for holistic risk mitigation strategies that include AI-driven solutions, other scholars explore how technology can specifically enhance procurement resilience. Goldfarb & Trefler (2018) and Vidhate et al. (2025) demonstrate that generative AI not only optimizes workflows and contract management but also proactively mitigates supplier risks through predictive analytics, albeit with challenges like data privacy and bias.

However, technological solutions must also contend with macro-level trade disruptions. Harrington (2025) shifts the focus to the tangible repercussions of geopolitical decisions, such

as U.S. reciprocal tariffs, which escalate costs and supply chain volatility, particularly for trade-dependent sectors. In this context, AI emerges as a critical tool for navigating tariff complexities, enabling dynamic compliance, supplier diversification, and logistics optimization, thereby bridging the gap between operational resilience and geopolitical adaptability.

Businesses investing in AI-powered systems are positioned to build more resilient supply chains amid these changing regulations. The implementation of AI can result in protectionist measures that hinder fair competition. The following subsection will detail it.

2.3. Navigating Trade Secrets in the Age of Artificial Intelligence

The rise of artificial intelligence (AI) disrupts traditional trade secret frameworks, as highlighted by Sprankling (2024) and ThankGod (2024), who identify AI's dual threat: its capacity to autonomously generate valuable information (undermining legal incentives for human innovation) and its superior ability to reverse-engineer protected secrets. These risks are compounded by AI's exponential growth in creative output, which outpaces static human capabilities, potentially disincentivizing innovation. Beyond intellectual property concerns, AI's transformative potential extends to procurement and trade strategy. Spreitzenbarth, Bode, and Stuckenschmidt (2024) demonstrate how AI enhances efficiency, reduces costs, and improves decision-making, although its adoption hinges on overcoming technical, organizational, and ethical hurdles. Jensen (2025) further contextualizes these challenges within the global AI arms race, arguing that safeguarding trade secrets is not merely an economic issue but a cornerstone of national security and geopolitical competitiveness.

This interplay between AI, trade, and security is underscored by Mamasoliev (2024), who ties AI-driven economic growth and supply chain resilience directly to U.S. trade policy, revealing how technological dominance increasingly shapes tariff wars. Strategic competition presents opportunities for improvement and resilience, but it also introduces new, complex challenges, particularly in safeguarding trade secrets and intellectual property.

The following section examines how AI impacts legal protections for trade secrets, with a focus on ownership of machine-generated content and the associated risks in the global AI environment, which are crucial for maintaining a competitive advantage and security.

2.4. Artificial Intelligence and Trade Policy: Economic Security Through Tariff Wars

This subsection examines the intersection between AI and trade policies in the current geopolitical context, with a focus on tariff wars. It explores how AI assists in navigating business disruptions, supporting strategic decisions, supplier diversification, logistics optimization, and compliance in real-time. It also examines their role in protectionist policies and the need for regulatory harmonization to avoid inequalities. AI emerges as a vital tool to mitigate the impacts of tariffs on pricing, costs, and investments.

While Huzaifa & Legacy (2024) and Badhan (2024) analyze the broader implications of modern trade wars, including their role as tools of economic coercion and their strain on the WTO's effectiveness, other scholars focus on sector-specific disruptions. Meltzer (2020) and Ribeiro (2025), for instance, highlight how tariffs particularly destabilize IT supply chains and cybersecurity, calling for updated digital trade regulations. Beyond immediate disruptions, Khan (2024) explores AI's dual role in both complicating and enhancing trade frameworks, stressing the need for international collaboration. Similarly, Harrington (2025) offers a structured approach, supported by Tao et al. (2025), to bolster procurement resilience through automation,

strategic trade policies, and talent development. Meanwhile, Öztürk (2024) underscores foundational challenges, such as data quality and ethical considerations, that must be addressed to fully harness AI's potential in reshaping global trade

3. METHODOLOGY

The main objective of this research is to understand how AI is transforming procurement into a strategic lever for value extraction and resilience, while also examining how this transformation intersects with the challenges posed by volatile trade policies and cyber threats. The study examines the relevance of AI in international logistics operations within companies engaged in foreign trade. Specifically, it focuses on how AI integration with procurement processes can address challenges related to tariff policies and cyber threats. The investigation centers on understanding how AI-enabled procurement functions can serve as strategic mechanisms for navigating complex international trade environments.

This study employs a qualitative research methodology (Creswell & Creswell, 2018; Lima & Newell-McLymont, 2021) to explore the subjective nature of social phenomena, aligning research objectives with experiential processes. The applied research nature (Gil, 2017) is designed to address social problems through practical investigations. Classified as exploratory research (Gil, 2017), this investigation aims to increase familiarity with the problem and formulate hypotheses about the transformative role of AI in procurement.

Data Collection Methods

A comprehensive literature review covering the period from 2020 to 2025 supports the complex approach needed by the rapid evolution of AI technology in procurement and logistics. This temporal scope ensures inclusion of the most current developments in AI applications for supply chain management, trade policy impacts, and cybersecurity considerations.

The methodology employs field research with procurement professionals through structured data collection instruments. The primary data collection method involves administering questionnaire surveys to 150 professionals involved in the procurement process, providing practical insights into the challenges and opportunities associated with AI adoption in procurement processes, between April 21, 2025, and Jun 20, 2025. The responses provided insights into their experiences, challenges, and potential opportunities related to leveraging AI-driven procurement to navigate the complexities of trade wars and cyber threats, ensuring both operational resilience and strategic advantage. The forms assessed respondents' experience and knowledge of generative AI. Upon receipt of the questionnaire responses, the results were analyzed with pie charts and frequency tables with proportions. The results were inferred, which led to the discussions presented.

The qualitative case study methodology validates literature findings through empirical data from corporate settings, providing a comprehensive understanding of AI implementation in real-world procurement environments. This approach enables examination of the practical implications of AI adoption within the specific context of international trade logistics. The study specifically examines the role of AI in cost optimization strategies designed to mitigate the impacts of tariffs, while simultaneously investigating how AI-enabled procurement systems can enhance organizational resilience against cyber threats. This dual focus reflects the complex operational environment faced by companies engaged in international trade.

The following section will analyze the results of the field research.

4. FINDINGS AND DISCUSSION

This section presents and discusses the main findings of the field research, based on data collected through questionnaires with purchasing professionals. The information obtained provides practical insights into how Artificial Intelligence (AI) is transforming the purchasing function into a strategic lever for operational resilience and competitive advantage, particularly in the face of challenges such as trade wars and cyber threats. During the discussion, the findings will be linked to the authors cited in the theoretical basis and introduction, deepening the analysis and validating the contributions of the literature present in the study.

General vision: 150 participants; seven different roles, nine market segments, balanced distribution between age groups; predominance of professionals with 11-15 years of experience and good representation of senior professionals (20+ years), with an average of 11.1 years of experience.

4.1. Demographic data

Distribution per role and dominant segments (Figs 1 and 2)

Figure 1. Distribution per role.

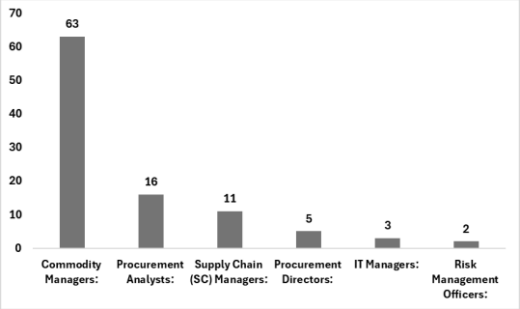
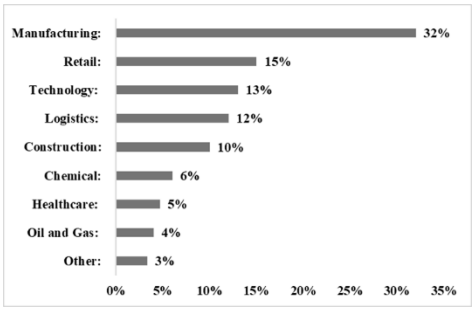


Figure 2. Dominant segments



Source: The authors

Commodity Manager: Largest group (63% of participants), procurement analyst: second position (16%), SC Manager: third position (11%).

The predominance of Manufacturing (32%) reflects its complexity in supply chain and production, indicating a strong influence on responses about AI in procurement. The industry benefits from AI by anticipating disruptions and optimizing processes. Retail (15%) also stands out for its reliance on demand forecasting and inventory management, areas well served by AI. The Technology sector (13%) contributes with specialized vision, given its familiarity with the advances and risks of AI. These segments shape perceptions of AI opportunities and challenges, based on their specific needs and contexts.

4.2. Current Adoption of AI in Procurement

This subsection shows the outcomes of AI adoption in Procurement

Starting with Table 1, the study shows the status of AI adoption in Procurement.

Table 1. AI Procurement adoption

Status	**%**

Broadly implemented	16
Moderately implemented	16.7
Limited pilots/trials	20.7
Planning within 12 months or more	22
No current plans	24,6

Source: The authors

About 33% of organizations have already adopted AI (broadly or moderately), 41% are either testing or planning to adopt it within the next 12 months or more, and roughly 25% have no current plans to implement AI.

The next question covers a realistic view of applications needed to manage Procurement processes. Organizations appear to prioritize AI applications that deliver direct business value through cost savings and risk mitigation (Figure 3).

Figure 3: Application in Procurement Processes

Source: The authors

There is an even distribution across different application types, suggesting diverse adoption strategies for AI. The data shows that most organizations are experimenting with multiple AI applications rather than focusing on just one.

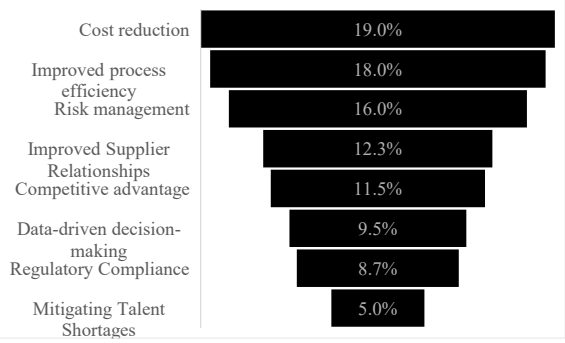
The most popular applications, which focus on Spend Analysis and Categorization (19%), align with Obinna & Momoh (2024), followed by Demand Forecasting (16.7%), as noted by Yeldan, Yılmaz & Kayatürk (2024). The first is identified as the most common application of AI in procurement processes, the second allows companies to analyze vast amounts of data to "optimize inventory levels, minimizing costs and improving service levels. Moderately popular are analytical and optimization functions, as noted by Vidhate et al. (2025) and Gibbins (2025), who claim that generative AI streamlines procurement flows and enhances contract analysis. However, they point out that contract management (11.4%) remains a critical area that needs improvement for greater effectiveness.

Supplier Risk Assessment is in line with Nwamekwe & Igbokwe (2024), which advises that "effective strategies should address both external and internal risks to improve Procurement resilience, such as using artificial intelligence to identify, mitigate, and plan for resilience, rather than automation. Chatbots and Fraud Detection show lower adoption rates.

The next question will find the key drivers for the adoption of Artificial Intelligence (AI) in Procurement.

Figure 4 outlines the key drivers for AI adoption in procurement:

Figure 4. Top drivers to AI adoption in procurement?



Source: The authors

This data reveals the top drivers for AI adoption in procurement, with cost reduction (19%) emerging as the primary motivation. This finding supports Yeldan, Yılmaz, and Kayatürk's (2024) research demonstrating how AI helps "minimize costs and improve service levels" through inventory optimization, reflecting organizations' focus on immediate ROI.

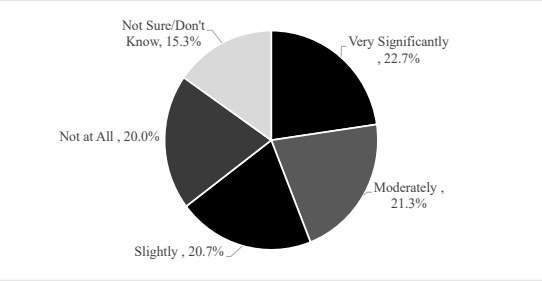
Close behind, improved process efficiency (18%) underscores the demand for streamlined operations, consistent with Spreitzenbarth, Bode, & Stuckenschmidt's (2024) findings on AI's cost-reduction capabilities. Risk management ranks third (16%), highlighting increased awareness of supply chain vulnerabilities. This aligns with research by Harrington (2025), Tao et al. (2025), and Shamsuddoha et al. (2025) on the role of AI in addressing trade war pressures and cyber threats.

Other significant drivers include improved supplier relationships (12.3%) (Harrington, 2025), competitive advantage (11.5%), which Jones (2023) identifies as "essential for organizational resilience"; data-driven decision making (9.5%), echoing Öztürk's (2024) emphasis on resolving data quality issues, regulatory compliance (8.7%), talent shortage mitigation (5.0%), where Harrington (2025) notes AI's ability to optimize workforce allocation.

4.3. Trade Wars and Geopolitical Impact

This subsection assesses the impact of Trade Wars and Geopolitical impacts. (Figure 5)

Figure 5. How significantly have the recent trade wars and geopolitical tensions impacted your procurement strategy?

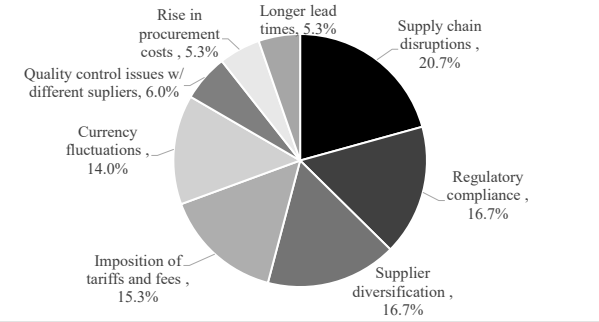


Source: The authors

The data reveals significant variation in how trade wars and geopolitical tensions affect organizations' procurement strategies. While 22.7% required major strategic overhauls—a finding consistent with Jones (2023)—others experienced more moderate effects: 21.3% adjusted following Mizgier (2024) and Harrington (2025), and 20.7% implemented only minor

changes, as noted by Ribeiro (2025). Meanwhile, 20.0% reported no operational impact, and 15.3% remained uncertain, which is consistent with the findings of Yiu, Cui, and Fan (2024). These disparities highlight the sector- and organization-specific nature of trade war consequences.

Figure 6. What recent trade-related wars and geopolitical tensions challenges has your organization faced?



Source: The authors

The figure outlines the various challenges organizations encounter due to trade wars and geopolitical tensions, including supply chain disruptions, regulatory compliance, supplier diversification, tariff imposition, currency fluctuations, and increased costs and lead times.

Supply chain disruptions (20.7%), as explained by Nwamekwe & Igbokwe (2024), are the top concern, driven by geopolitical tensions, disasters, and pandemics, which cause delays and increase costs. Regulatory compliance (16.7%), as confirmed by Huzaifa & Legacy (2024), has become a central feature of modern international relations. Tariffs, as instruments of economic coercion, are also critical amid evolving trade policies, with AI offering support in monitoring. Supplier diversification (16.7%) improves resilience (Harrington, 2025), but it also adds complexity, such as Quality control (6%), which becomes harder with diversified suppliers.

According to Harrington (2025), Tariffs (15.3%) increase financial strain and affect competitiveness. Currency fluctuations (14.0%), as confirmed by Badhan (2024), pose a significant challenge to multinational operations, necessitating the implementation of effective hedging strategies to mitigate these risks. Procurement cost increases (5.3%) and longer lead times (5.3%) further pressure margins and service levels, demanding strategic risk management, financial planning, and operational efficiency from global organizations.

The relatively even distribution of responses across various challenge types suggests that organizations simultaneously deal with interconnected trade-related difficulties. This interconnectedness underscores the complexity of the current trade environment and the need for comprehensive solutions.

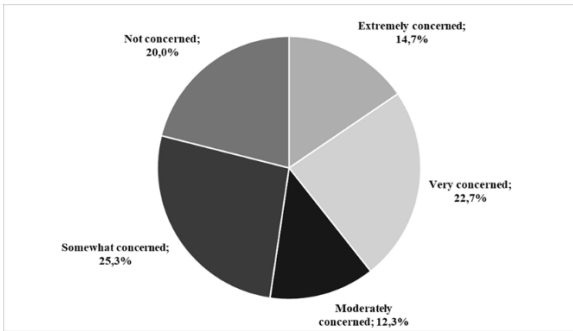
4.4. Cybersecurity Concerns

This section assesses how Organizational concern levels shape cybersecurity investments in procurement, with AI-driven solutions bridging critical gaps.

How do varying levels of organizational concern about cybersecurity threats in procurement influence their adoption of protective measures, and what role can AI-driven solutions play in addressing these gaps?

This figure details organizations' levels of concern about cybersecurity threats in procurement and the role of Artificial Intelligence (AI)-driven solutions in filling these gaps. (Figure 7)

Figure 7- Levels of Organizational concern about cybersecurity threats



Source: The authors

A substantial portion of organizations (37.4%) exhibit high levels of concern about cybersecurity threats in procurement, aligning with Jones (2023), which outlines the transformative landscape in the procurement industry, driven by a "wave of sophisticated cyber threats" targeting supply chains. Organizations in this category are likely to invest significantly in cybersecurity measures, such as AI-driven threat detection and response systems, and prioritize cybersecurity training and awareness programs for their procurement teams.

Approximately 18% of organizations have a moderate level of concern, indicating that while they acknowledge the risks, they may not consider cybersecurity a top or immediate priority. This information is key to understanding the importance of "re-validating third-party risk management frameworks and promoting more rigorous security audits for new vendors," as suggested by Sivesind (2025). AI-driven procurement solutions could help them enhance their cybersecurity posture without requiring substantial additional resources.

Nearly half of the respondents (45.3%) have low or no concern about cybersecurity threats in procurement. According to Sprankling (2024) and ThankGod (2024), this could indicate a lack of awareness, an underestimation of risks, or a misplaced confidence in existing security measures.

Organizations with low concern levels may be more vulnerable to cyber threats and the potential impacts of cybersecurity breaches. The benefits of proactive measures, such as AI-driven threat detection, could be crucial for these organizations.

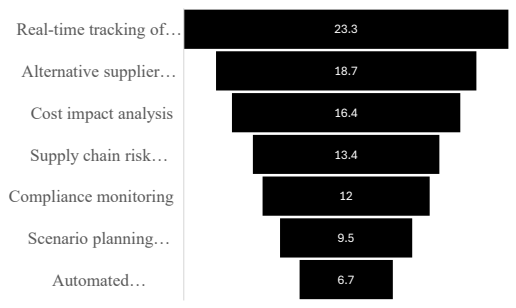
4.5. Commercial wars and Geopolitical impact.

This section assesses AI capabilities and applications for managing trade wars.

Figure 8. Are AI capabilities most valuable in managing the impacts of the trade war?

This figure outlines the Artificial Intelligence (AI) capabilities most valued by organizations for managing the impacts of trade wars, emphasizing the need for immediate, tangible value and agility in uncertain trade environments. Priorities include real-time monitoring of tariffs and regulations, identifying alternative suppliers, conducting cost impact analyses, and modeling risks. (Figure 8)

Figure 8- Most valuable AI capabilities.



Source: The authors

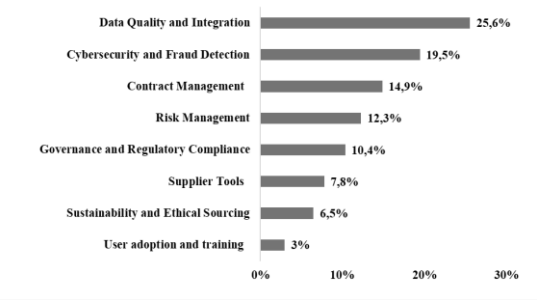
These results reveal that organizations facing trade war challenges are focused on AI capabilities that deliver immediate, tangible value in business crisis management, emphasizing the need for agility and preparedness in uncertain trade environments.

Real-time monitoring of tariffs and regulations leads with 23.3%, standing out as a practical priority as observed by Yeldan, Yılmaz, and Kayatürk (2024) in the face of rapidly changing business scenarios. Identifying alternative suppliers (18.7%) reflects the importance of risk diversification. Cost impact analysis (16.4%) and risk modeling (13.4%), as discussed by Harrington (2025), Yekeen, Ewim, and Sam-Bulya (2024), and Obinna and Momoh (2024), focus on quantifying and anticipating the consequences of these factors. The lower interest in simulation (9.5%) and automated document management (6.7%) suggests a preference for reactive and operational actions over long-term strategic planning.

Figure 9. What AI applications are currently used in your purchasing processes?

It reveals the current application of AI in acquisition processes, indicating a pragmatic focus on solving immediate operational problems, but may neglect fundamental elements such as training and sustainability.

Figure 9:. AI applications used in purchasing processes



Source: The authors

The findings highlight persistent challenges with data quality, security concerns (including fraud), and the need for improvements in areas such as contract management, risk management, and compliance. It also demonstrates a pragmatic focus on addressing immediate operational problems, but may overlook fundamental elements, such as training and sustainability.

While Figure 4 indicates that "cost reduction" and "improved process efficiency" are the primary drivers for AI adoption, "Mitigating Talent Shortages" scores significantly lower; staff upskilling and training may be undervalued compared to direct operational and financial gains, which

explains the lower result in Figure 8. Data quality issues (25.6%), as corroborated by Ozturk (2024), such as inconsistent formats, incomplete historical records, and a lack of standardized classification, reduce the effectiveness of AI in procurement. As a result, only a small number of procurement teams have implemented meaningful AI solutions. Security concerns also persist, with the emergence of evolving fraud tactics and vulnerabilities to sensitive data, particularly in outdated legacy systems. Nearly a 20% rise in concern underscores the need to enhance AI for fraud detection. At the same time, Table 3 explicitly lists "Cybersecurity Vulnerabilities and Fraud," mentioning "AI-driven procurement fraud" and "low cybersecurity readiness" as factors that "increase risks in AI-driven supplier networks."

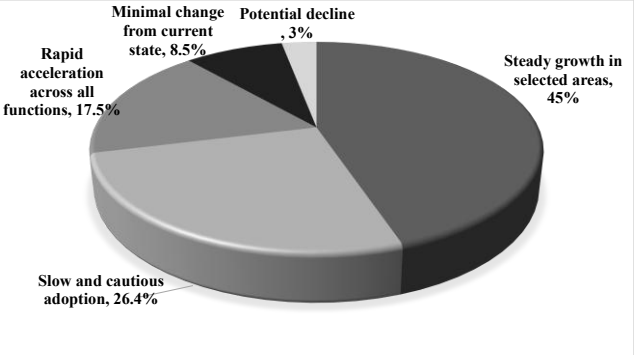
4.6. Future Perspectives and Strategic Considerations.

This section examines the perspectives and considerations for adopting AI within procurement and enterprise organizations.

Figure 10. How do you expect AI adoption in procurement to change in the next 3 years?

This figure addresses prospects and strategic considerations for the adoption of AI in procurement, reveals cautious optimism on the part of organizations

Figure 10: Changes in AI Adoption in the next three years:



Source: The authors

The results indicate cautious optimism regarding the use of AI in procurement. Steady growth in selected areas (45%) dominates, indicating a focused strategic approach, where companies prefer to deepen specific applications that have already demonstrated value (Mizgier, 2024; Spreitzenbarth, Bode, & Stuckenschmidt, 2024). Slow and cautious adoption (26.4%), as noted by Goldfarb & Trefler (2018) and Vidhate et al. (2025), reinforces this prudence, reflecting the complexity of procurement processes and the need for rigorous validation. Table 3 details several "constraints" for AI implementation that justify this caution (Khan, 2024). The low rate of 'rapid acceleration across all functions' (only 17.5%), while minimal change (8.5%) and potential decline (3%) are in the minority, suggests skepticism about immediate disruptive transformations, and indicates that AI consolidation will require time, resources, and significant cultural changes (Spreitzenbarth, Bode, & Stuckenschmidt, 2024). Moreover, reflecting the complexity of procurement processes and the need for rigorous validation.

Open-ended questions

The open-ended questions from the field research, presented in Tables 2 and 3, constitute a fundamental qualitative component of this study in connecting the theoretical framework with

the research objectives by gathering direct opinions and experiences from practitioners and providing empirical insights from procurement professionals. These qualitative data not only validate and deepen the understanding of the research's main objectives and challenges but also complement the quantitative findings with expert perspectives.
By capturing professionals' firsthand experiences and perceptions, the open-ended responses offer a richer, more nuanced understanding of how organizations are practically navigating AI integration in procurement operations within today's complex global landscape. This methodological triangulation strengthens the study's comprehensive analysis of AI adoption challenges and opportunities in procurement processes. (Tables 2 and 3)

Table 2. What are the most significant opportunities for AI in procurement in today's global environment?

Classification	Opportunity	Impact
Critical Priority	Improved Risk Management and Supply Chain Resilience. 24 mentions	Reduces disruptions through real-time supplier monitoring and alerts for alternative sourcing.
Foundational	Data-Driven Decision Making and Insights. 20 mentions	Synthesizes disparate data into actionable insights. AI analytics drives cost savings and compliance.
High ROI	Operations Optimization and Cost Reduction. 16 mentions	Reduces labor costs by approximately 40% of the Purchase-to-Payment (P2P) process
Strategic Leverage	Optimized Supplier Management and Negotiation. 15 mentions	Supplier performance history analysis and market benchmarks to drive optimal contracts.
Resilience Builder	Design Category Strategies for Alternative Sourcing. 20 mentions	Identifies backup suppliers and materials, cutting sole-source dependency risks.
Competitive Edge	Profound Insights into Market Trends and Supplier Dynamics. 22 mentions	Early trend detection unlocks first-mover advantages
Operational Efficiency	Automatic Spending Classification. 30 mentions	Classifying 90% or more of spend data without manual tagging accelerates audit readiness and improves spend visibility.

Source: The authors

AI's top opportunity (30 mentions) lies in automating the classification of invoices, P-card data, and purchase orders. By utilizing NLP on descriptions and line items, large language model classifiers can map spending to UNSPSC or custom taxonomies in real-time, with cleaner data for dashboards, category strategies, and fraud detection. This leads to faster month-end closes and a single-trusted version of spending, essential for analytics.

Improved Risk Management & Supply-Chain Resilience (24 mentions): Machine learning and early-warning systems analyze shipment milestones and external data to flag disruptions before shortages occur, allowing proactive adjustments.

Insights into Market Trends & Supplier Dynamics (22 mentions): Generative AI copilots analyze earnings calls and macroeconomic data to identify commodity shifts and supplier health signals.

Data-Driven Decision Making & Insights (20 mentions): Integrating ERP, PLM, and IoT data into graph databases reveals cost-saving insights, transforming dashboards from descriptive to prescriptive.

Operations Optimization (16 mentions): Reinforcement-learning models optimize logistics and replenishment, reducing costs while maintaining supply chain responsiveness.

Together, these opportunities sketch a roadmap: start with high-volume data hygiene (automatic classification), layer on predictive risk and market intelligence, and then unlock strategic re-design and negotiation automation, each built on the last, explaining why respondents ranked them in roughly that order.

Table 3. Given today's trade and security challenges, what worries you most about implementing AI in procurement?

Concerns	Constraints
Regulatory Uncertainty and Compliance Risks.	Brazil's PL 2338/2023 is still under legislative review, which creates ambiguity regarding liability, data use, and risk classifications for AI systems.
High Operational Costs and Tax Burdens.	High import taxes on AI hardware, High energy expenses for AI data centers, and Limited fiscal incentives for AI adoption.
Data Quality and Integration Challenges	Fragmented ERP systems and legacy databases are a constraint to AI training, and LGPD (Data Protection Law) complicates AI training by restricting access to procurement datasets.
Geopolitical and Trade Risks	Brazil's partnerships with the USA and China create compliance conflicts. Semiconductor dependence, coupled with reliance on imported chips (subject to U.S. Tier 2 export controls), poses a threat to supply chain resilience.
Cybersecurity and Fraud Vulnerabilities	AI-driven procurement fraud and low cybersecurity readiness (score: 28/100, according to UNESCO) increase risks in AI-powered supplier networks.

Source: The authors

AI adoption in procurement in Brazil faces key barriers, including regulatory uncertainty intensified by PL 2338/2023, unclear legal responsibilities, and data use restrictions under the LGPD. High operating costs, such as taxes on data centers, and fragmented ERP systems hinder implementation. Legacy databases further complicate integration. Dependence on U.S. and Chinese semiconductor technologies introduces geopolitical and commercial risks. Additionally, the increasing prevalence of AI-driven fraud and weak cybersecurity heightens supplier network vulnerabilities.

The following subsection presents actionable strategies to address these issues, including regulatory clarity, cost reduction, and improved data governance. A proactive, collaborative approach can help organizations optimize AI adoption in procurement, enhance resilience, and gain a strategic leverage globally. (Table 4)

4.7. Suggestions for improvements

Table 4: Actionable strategies for improvements

Source	Improvements
Gibbins 2025	Adopt an agile, adaptable mindset that embraces uncertainty and prioritizes flexibility across all operations. Establish clear AI-human collaboration models, defining algorithmic decisions, areas for human judgment, and roles for translating AI insights into actionable plans. Create a dedicated pricing command center with a cross-functional team empowered by AI analytics, clear decision rights, and senior leadership access. Transform data infrastructure by connecting siloed systems and implementing AI-based data cleaning tools to ensure integrated, high-quality data. Utilize AI to automate routine analytical tasks and celebrate successes while developing AI-supported scenario planning skills.
Luz 2024	Enhance efficiency and speed by integrating technology and AI into logistics processes, utilizing systems such as WMS, TMS, and RFID for inventory management, warehouse management, and route planning. Enhance communication with real-time technologies to drive accuracy and minimize errors across SC operations. Leverage AI for process analysis, risk management, document oversight, and continuous monitoring to support data-driven decision-making and transportation safety. Focus on supply chain optimization and cost reduction through strategic application of technology and AI.
Santos, Baptista, and Novais (2024).	Integrate technology and AI into logistics processes to enhance efficiency and speed, utilizing systems such as WMS, TMS, and RFID for inventory management, warehouse management, and route planning. Enhance communication with real-time technologies to increase accuracy and minimize errors across internal and external operations. Leverage AI for process analysis, risk management, document oversight, and continuous monitoring to support data-driven decision-making and transportation safety. Focus on supply chain optimization and cost reduction through strategic application of technology and AI.
Sivesind 2025	Re-evaluate third-party risk management frameworks and promote more rigorous security audits for new vendors. Consider diversifying procurement strategies before supply chain changes force you to make reactive decisions. Keep up to date with foreign trade regulations that affect cybersecurity toolkits. Collaborate with legal and compliance teams to ensure that changes in business policies do not impact security research. Monitor new export restrictions when sourcing components and materials from at-risk regions and have contingency plans in place. Plan now, not later, for the cyber risks created by hasty supplier choices. Explore supply chain partnerships outside of tariff-affected regions. Monitor tariff retaliation from trading partners that may impact international sales and trade. Perform due diligence on potential new vendors, striking a balance between speed, agility, and the depth of security review.
Negrea 2024	Classical deterrence models are ineffective in cyberspace due to challenges in attribution, asymmetric threats, and the involvement of non-state actors. Prioritizing the hardening of critical infrastructure, such as energy grids and financial systems, is essential to minimize the impact of cyberattacks. Promote multinational alliances and public-private partnerships to enhance the sharing of threat intelligence and improve collective cybersecurity. Implement a dynamic foreign policy that acknowledges the complexities of international relationships while fostering collaborations that enhance the company's security and stability.
Colther, Doussoulin & Tontini (2024)	Prepare for AI-enabled cyberattacks (e.g., deepfakes, automated hacking) that challenge international norms. Develop adaptive governance frameworks that strike a balance between innovation and ethical guardrails, drawing on the OECD's AI principles and the EU's AI Act as potential models for guidance. These frameworks should incorporate standardized risk assessments, equitable resource sharing, and inclusive global forums to mitigate the destabilizing effects of AI.

Source: The authors

Among all the improvements suggested, Sivesind's (2025) proposal deserves highlighting as it provides a fundamental foundation for building safer and more resilient supply chains. It is not limited to a mere compliance task. However, it represents a proactive strategic measure that, when combined with improved data quality, investment in human capacity, and international regulatory cooperation, allows organizations to transform risks into competitive advantages and operate with greater confidence in an uncertain global environment.

5. CONCLUSION AND FUTURE STUDIES

The current study primarily aimed to explore how organizations can leverage AI-driven procurement to navigate the complexities of trade wars and cyber threats, thereby ensuring both operational resilience and strategic advantage in an increasingly uncertain world. By examining this question, we sought to understand how Artificial Intelligence is transforming procurement into a strategic lever for value extraction and resilience, intertwining with the challenges posed by volatile trade policies and cyber threats.

The field research revealed that the global procurement landscape is undergoing a significant transformation, evolving from a cost-focused, transactional function to an AI-driven strategic pillar essential for organizational resilience and competitive advantage. Global forces, including escalating trade wars, shifting geopolitical alliances, and an increase in cyber threats, have exposed urgent vulnerabilities that require new approaches to risk management and agility. In this context, AI emerges as a transformative force, not limited to automating routine tasks, but empowering organizations to anticipate disruptions, optimize sourcing strategies, and safeguard critical supply chains. The adoption of AI is catalyzing the digitization of supply chain management, enabling real-time visibility and predictive analytics previously unattainable.

The most significant opportunities for AI are in automated spending classification, risk management, and market analysis. The future holds a growing and strategic adoption of AI, starting with enhancements in data quality and progressing to predictive intelligence and automated negotiation. However, the challenges are significant: regulatory uncertainties, high costs, data integration, business risks, and cyber vulnerabilities. To overcome these barriers, an agile approach, collaboration between humans and AI, investments in data infrastructure, and strengthening public-private alliances are recommended, ensuring greater resilience and security in the use of AI in procurement.

Despite its potential, implementing AI in procurement faces significant challenges, including regulatory uncertainty and compliance risks, high operational costs, data quality and integration issues, geopolitical and business risks, as well as cybersecurity and fraud vulnerabilities. Suggestions for improvement emphasize the adoption of an agile mindset, human-AI collaboration, transformation of data infrastructure, and the promotion of public-private alliances and partnerships to bolster cybersecurity and resilience.

In summary, AI is a strategic imperative for survival and growth in today's procurement environment. Organizations that fail to adapt can face disruption, financial losses, and reputational damage. At the same time, those that embrace AI-driven procurement gain a significant competitive advantage in terms of agility, security, and overall effectiveness.

The study's contribution lies in its comprehensive and practical approach to mapping the landscape of AI adoption in procurement, detailing how it can serve as a strategic differentiator in overcoming the challenges posed by trade wars and cyber threats, while also identifying the main opportunities and obstacles based on empirical data from professionals in the field.

Future research could focus on detailed case studies of AI implementation in various sectors and regions, examining the specifics of its application, the challenges overcome, and the results achieved in terms of resilience and strategic advantage.

Alternatively, develop and test methodologies and technologies to enhance the quality and integration of data in legacy and fragmented procurement systems, including the application of Large Language Models (LLMs) for classifying and standardizing spend data.

There is also a need for research on advanced AI applications for detecting and preventing fraud in procurement, as well as for strengthening the security of sensitive data.

This is an ongoing subject that warrants ongoing research to update the status quo of global trade.

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