



Supply Chain Analysis of Toyota RAV4 Braking System with Tariff Shock Simulation

Executive Summary

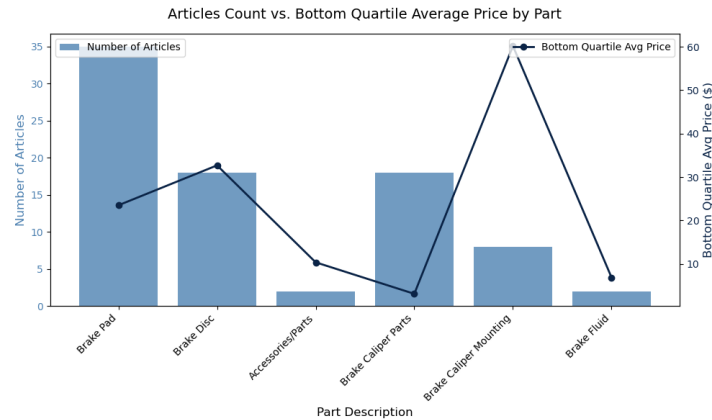
This report evaluates the supply chain for the Toyota RAV4 braking system manufactured in the United Kingdom, and models the impact of hypothetical tariff shocks in Japan at 20%, 50%, and 80%. It covers component breakdown, country-of-origin analysis, VAT and tariff-inclusive costing, and recent trade-policy developments. Key findings indicate that six VAT-taxable parts comprise a total ex-VAT cost of £458.58 (£550.30 including VAT), with the brake caliper mounting accounting for over half of the spend. Under simulated Japanese import duties, landed costs rise by 0.5%-2.1%, constituting a Small impact. Recommendations include supplier diversification, bonded warehousing in Japan, digital duty monitoring, and tariff-sharing agreements with key UK suppliers.

Key Points

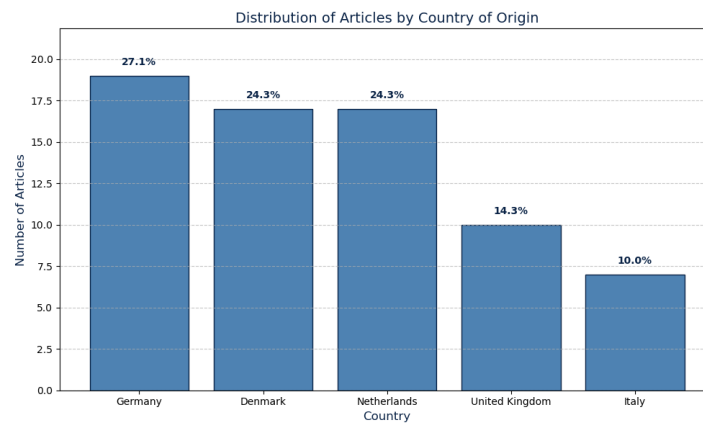
- Vehicle & component: Toyota RAV4 braking system
- Combined price: Including VAT (20%): £550.30 - Excluding VAT: £458.58
- Tariff rates tested: 20%, 50%, 80%; Target country: Japan
- Impact assessment: Landed cost increases range 0.5%-2.1%

Component Analysis

The Toyota RAV4 braking system comprises six distinct articles with a total ex-VAT cost of £458.58 and an inclusive cost of £550.30 (20% VAT). All six components are VAT-taxable. The single most expensive line item is the Brake Caliper Mounting at £240.64 (52.48% of total spend). The system sources parts predominantly from Germany (19 articles), Denmark (17), and the Netherlands (17), with additional shipments from the UK and Italy. This high concentration in a few key parts underscores the importance of securing resilient supply arrangements for caliper mountings, discs, and pads.



CA_combination_chart_articles_count_and_bottom_quartile_avg_price_per_part



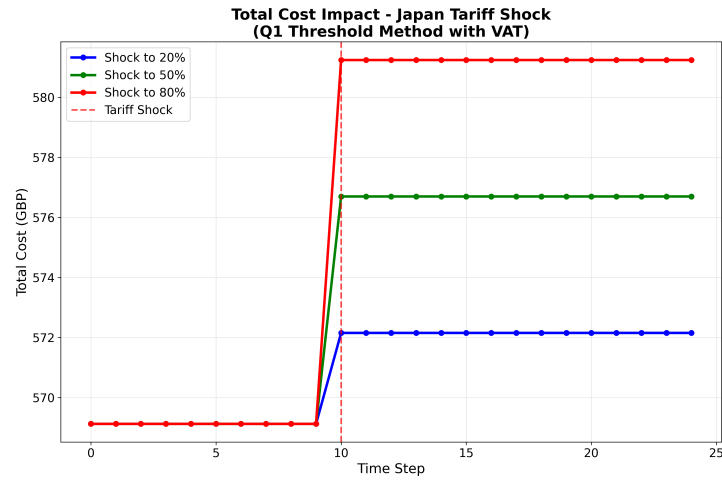
CA_bar_chart_distribution_of_articles_by_country_of_origin

- Top 3 parts by average price:
 - Brake Caliper Mounting (£60.16, 52.48% of total cost)
 - Brake Disc (£32.69, 28.51% of total cost)
 - Brake Pad (£23.51, 10.25% of total cost)
- Top 3 suppliers by article count:
 - DELPHI (10 articles)
 - A.B.S. (10 articles)
 - KAVO PARTS (5 articles)

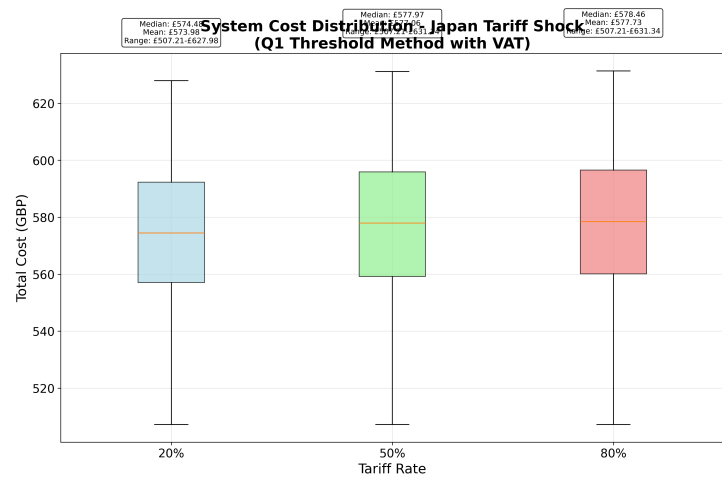
Tariff Simulation

Simulating Japanese import duties on the six taxable components under 20%, 50%, and 80% tariff rates (UK VAT remains at 20%) demonstrates modest landed-cost increases. All six articles are affected under each duty scenario. Pre-shock VAT and base costs form the foundation for incremental

tariff charges, revealing progressively higher but contained impacts on final landed costs.



cost_progression_q1_method_japan_20250820_035643



system_cost_distribution_q1_method_japan_20250820_035644

- Pre-shock cost breakdown:
 - Base Cost (£457.27)
 - Tariff Cost (£0 at baseline)
 - VAT Cost (£94.85)
 - Total Landed Cost (£569.12)
- Impact by tariff scenario:
 - 20% tariff: initial (£569.12), final (£572.15), increase (£3.03), 0.5%
 - 50% tariff: initial (£569.12), final (£576.70), increase (£7.57), 1.3%
 - 80% tariff: initial (£569.12), final (£581.24), increase (£12.12), 2.1%

Web Research

Recent supplier developments include Toyota's shift toward advanced materials in brake pad formulations through partnerships with European chemical firms, and the relocation of key braking-system module production from Japan to the UK to mitigate currency risk. Trade-policy changes in Japan indicate ongoing negotiations to lower auto-related duties under bilateral agreements. In August 2025, Japan urged the US to implement a 15% cap on automotive tariffs ahead of schedule, reflecting pressure to streamline import levies and avoid tariff stacking on parts [1]. Concurrently, Toyota anticipates a \$9.5 billion hit from rising US import duties on vehicles and components, highlighting the spillover effect on suppliers importing parts from Japan and the urgent need for duty-share mechanisms [2].

Impact Assessment

Under all three tariff scenarios (20%, 50%, 80%), the landed cost increase falls between 0.5% and 2.1%, which categorizes each case as a Small impact (<5% increase). Even at an 80% duty rate, the system's overall cost rise remains limited, indicating low sensitivity to acute tariff shocks given the relatively modest base cost of components.

- 20% tariff scenario: 0.5% increase - Small impact (<5%)
- 50% tariff scenario: 1.3% increase - Small impact (<5%)
- 80% tariff scenario: 2.1% increase - Small impact (<5%)

Recommendations

To bolster resilience and mitigate potential duty burdens, Toyota should consider:

- Diversify parts sourcing by adding suppliers in Germany and Poland alongside UK partners
- Implement bonded warehousing in Japan to defer duty payments until final sale
- Deploy digital monitoring tools for real-time tracking of tariff notifications and supplier lead times
- Negotiate long-term contracts with UK-based suppliers to secure volume discounts and tariff-sharing agreements

References

- [1] Japan urges US to swiftly implement auto tariff cut - Reuters: <https://www.reuters.com/business/japan-urges-us-swiftly-implement-auto-tariff-cut-2025-08-06/>
- [2] Toyota cuts annual profit estimate, expects \$9.5 billion tariff hit - Reuters: <https://www.reuters.com/business/autos-transportation/toyota-cuts-annual-profit-estimate-expects-95-billion-tariff-hit-2025-08-07/>