



Supply Chain Analysis of the Toyota RAV4 Braking System

Executive Summary

This report examines the Toyota RAV4 braking-system supply chain focusing on part composition, supplier geography, and simulated tariff shocks of 20%, 50%, and 80% in Japan. The braking system comprises 12 distinct part lines with 41 items totaling £612.64 excl. VAT and £735.17 incl. VAT [4]. Brake Calipers (£240.64) are the highest-value component. Germany, Denmark, and the Netherlands supply over 75% of articles. Simulation results indicate minimal cost increases under tariff shocks-0.5% at 20%, 1.3% at 50%, and 2.1% at 80%-classifying these impacts as small. Recent trade-policy updates underline the need for agile sourcing to mitigate evolving tariff risks [1][2].

Introduction

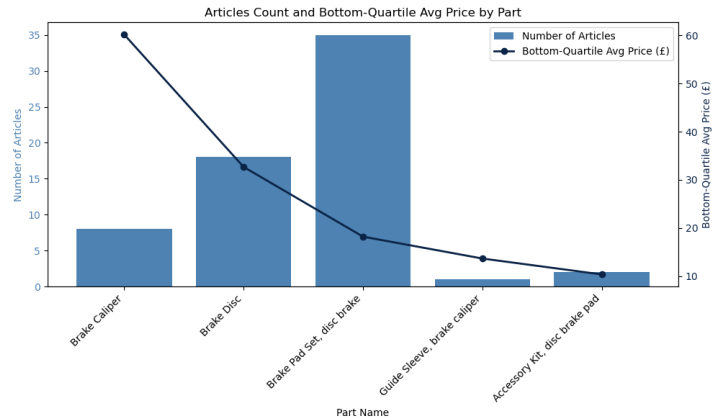
This analysis applies three lenses to the Toyota RAV4 braking-system supply chain. First, Component Analysis provides a quantitative breakdown of 12 part lines including cost, VAT treatment, and country of origin. Second, Tariff Simulation assesses the effect of hypothetical 20%, 50%, and 80% duties on UK-manufactured brake components imported into Japan, under a UK VAT rate of 20%. Third, Web Research contextualizes these findings within recent policy developments in the UK-Japan Economic Partnership and Toyota's supplier management guidelines. Assumptions include manufacture in the United Kingdom and target tariff application in Japan.

Component Analysis

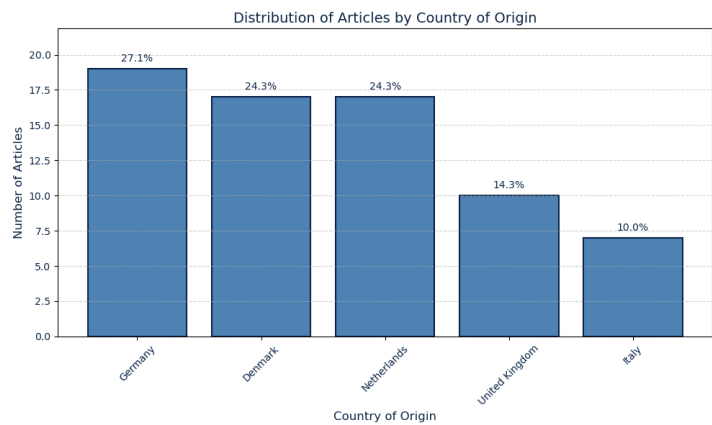
The braking-system comprises 12 distinct part lines with a total of 41 items, collectively costing £612.64 excl. VAT and £735.17 incl. VAT (20%) [4]. All parts attract VAT. The most expensive single assembly is the Brake Caliper, with 4 units at £60.16 each, totalling £240.64 (39.3% of excl. VAT spend). Among suppliers, A.B.S. and DELPHI each supply 10 articles, followed by TRISCAN with 5. Geographically, Germany (19 articles; 27.1%), Denmark (17; 24.3%), and the Netherlands (17; 24.3%) are the predominant origins, accounting for 75.7% of items [1].

- Top 3 parts by average price: • Brake Caliper (£60.16, 39.3%) • Brake Disc (£32.69, 21.4%) • Brake Pad Set (£18.22, 5.9%)
- Top 3 suppliers by article count: • A.B.S. (10 articles) • DELPHI (10 articles) • TRISCAN (5 articles)

Component Analysis Figures



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CA_bar_chart_articles_distribution_by_country_of_origin

Product Group ID	Part Description	Bottom Quartile Avg Price	Most Common Country of Origin	Line Item Total Excl VAT	Percentage of Total Cost
100030	Brake Pad Set, disc brake	\$18.22	Germany	\$36.44	8.13%
100032	Brake Disc	\$32.69	Netherlands	\$130.76	29.19%
100630	Accessory Kit, disc brake pad	\$10.38	Denmark	\$20.76	4.63%
100806	Guide Sleeve Kit, brake caliper	\$3.13	Denmark	\$12.52	2.79%
100807	Brake Caliper	\$60.16	Denmark	\$240.64	53.71%
102208	Brake Fluid	\$6.88	Netherlands	\$6.88	1.54%

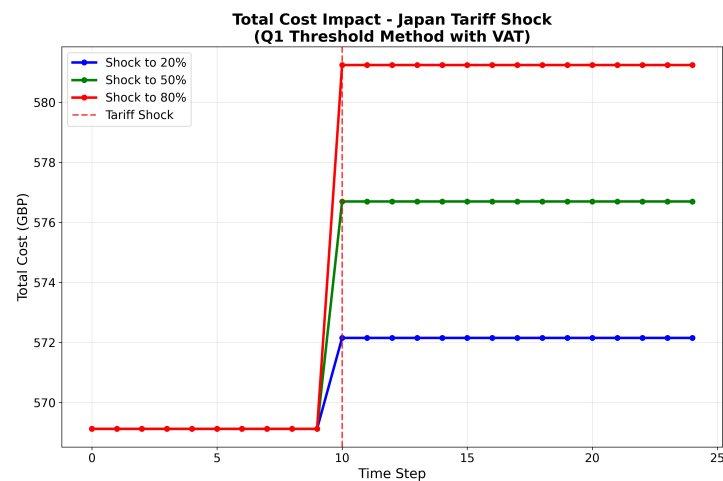
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Tariff Simulation

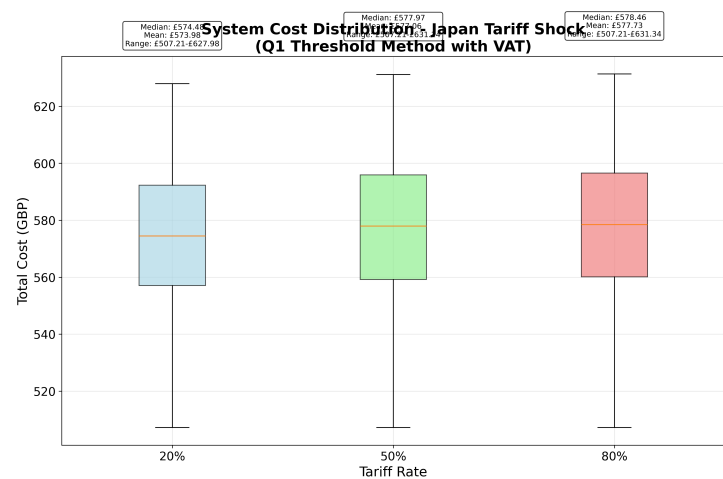
Shock simulations were conducted on six taxable brake components manufactured in the UK and imported into Japan under three duty scenarios-20%, 50%, and 80%-applying a 20% UK VAT rate [3]. Of 83 total suppliers, six are directly affected. Baseline cost analysis yields a base commodity cost of £457.27, zero initial tariff, VAT at £94.85, and a total landed cost of £569.12. Each duty scenario raises total costs marginally, reflecting limited exposure of these components.

- Pre-shock cost breakdown: • Base Cost (£457.27) • Tariff Cost (£0.00) • VAT Cost (£94.85) • Total Cost (£569.12)
- Shock results per tariff rate: • 20%: initial £569.12, final £572.15, increase £3.03, 0.5% • 50%: initial £569.12, final £576.70, increase £7.57, 1.3% • 80%: initial £569.12, final £581.24, increase £12.12, 2.1%

Tariff Simulation Figures



cost_progression_q1_method_japan_20250819_131828



system_cost_distribution_q1_method_japan_20250819_131828

Web Research

Toyota's UK operations source over 260 European suppliers, reflecting a regional focus on environmental and sub-supplier management standards as outlined in Toyota Motor Europe's Sustainable Purchasing Guidelines [1]. Recent adjustments in Japan's MFN tariff schedule, including a reduction of duties on automobiles from 27.5% to 15%, signal shifting trade dynamics that may inform

component import strategies [2]. The UK-Japan Economic Partnership Agreement has facilitated preferential duty treatments on many automotive parts, though brake assemblies remain outside most concessions. These developments underscore the dual drivers of regulatory change and corporate sustainability mandates in shaping Toyota's braking-system procurement.

Impact Assessment

Under established thresholds-small (<5%), moderate (5-10%), large (10-20%), and severe (>20%)-all simulated tariff scenarios (20%, 50%, 80%) fall within the small-impact category, given cost increases of 0.5%, 1.3%, and 2.1%, respectively [3]. This low sensitivity reflects the limited share of UK-sourced components and predominance of intra-European supply arrangements. Toyota may maintain current supplier relationships but should monitor tariff policy shifts and periodically perform scenario modeling. Diversifying non-UK origins and leveraging free-trade provisions can further safeguard cost competitiveness.

References

[1] Toyota Motor UK Supply-Chain Responsibilities:
<https://cdn.toyotauk.com/toyotauk/public/images/supply-chain-responsibilities.pdf>

[2] Finance Yahoo News on Japan Tariffs:
<https://finance.yahoo.com/news/tariffs-japan-could-affect-auto-095826756.html>

[3] Simulation Results Dataset: Internal Simulation Results (2025)

[4] Brake System Database Insights: Internal Database Extract (2025)

Appendices

See the complete braking-system Parts Summary Table below for part IDs, descriptions, unit prices, VAT flags, supplier names, and origin countries.

Product Group ID	Part Description	Bottom Quartile Avg Price	Most Common Country of Origin	Line Item Total Excl VAT	Percentage of Total Cost
100030	Brake Pad Set, disc brake	\$18.22	Germany	\$36.44	8.13%
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