Research Proposal: *Evaluating the Economic Viability of Onshoring Key Material and Sub-Component Manufacturing in the Australian Caravan Industry*

BUS505 Research Methods

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Executive Summary

This research proposal investigates whether it is economically viable for the Australian caravan manufacturing sector to onshore the production of key material inputs such as aluminium frames, composite cladding, and water systems. With global supply chains facing unprecedented volatility post-pandemic, the sector's dependence on offshore suppliers — particularly from Southeast Asia — has become a significant operational risk. Using a dual modelling approach, the study applies Total Landed Cost (TLC) analysis to evaluate short-term cost competitiveness, and Net Present Value (NPV) analysis to assess long-term investment viability. Data will be gathered through secondary industry reports and semi-structured interviews with key caravan manufacturers and suppliers. The study aims to provide evidence-based insights into whether partial reshoring would enhance resilience without undermining financial sustainability, recognising that SMEs dominate the Australian caravan sector. Strategic and policy implications will be drawn, contributing both to academic reshoring literature and practical decision-making for the industry.

Background and Context

Global manufacturing networks have long favoured offshore production strategies due to cost minimisation imperatives. However, shocks such as the COVID-19 pandemic, geopolitical disruptions, and logistical delays have exposed the risks inherent in globally dispersed supply chains. Australia, which has historically faced challenges in sustaining a competitive manufacturing base, is now revisiting the balance between global integration and local capacity.

The caravan manufacturing sector, while niche, is a prime example of the broader debate. With over 45,000 units produced annually and significant regional economic contributions, the industry remains heavily reliant on imported inputs. Components such as aluminium framing, acrylic windows, water systems, and suspension kits are commonly sourced from China, Europe, and North America. These dependencies have constrained production during global shipping crises and raised concerns about quality, lead times, and strategic autonomy.

The Australian caravan manufacturing industry has grown in economic and cultural importance over the past two decades. As of 2024, the sector contributes over $27 billion annually to the national economy and supports thousands of jobs, particularly in regional areas (Caravan Industry Association of Australia, 2024). Its relevance spans multiple policy domains—tourism, manufacturing, regional development, and housing affordability. Despite this, the industry remains structurally dependent on imported materials to produce key sub-components such as aluminium chassis frames, fibreglass or composite cladding, and internal systems like water tanks and plumbing.

Historically, offshoring these components has been rationalised through cost minimisation. Cheaper labour, raw materials, and scale efficiencies abroad, especially in China, have enabled Australian manufacturers to remain price competitive in a consumer-driven market. However, the COVID-19 pandemic, the Russia-Ukraine conflict, port congestion, rising container shipping rates, growing trade tensions across the globe, and an increasing awareness of Australia's strategic economic vulnerabilities have created renewed interest in sovereign capability and local manufacturing resilience (Australian Government, 2022).

The vulnerabilities exposed in recent years have had real implications for the caravan industry. Lead times for parts have extended by several months, freight prices have more than doubled in some cases, and the risk of sudden production halts due to overseas supply chain failures has risen. The industry has also seen growing quality and compliance issues rise as supply chains become weaker and more disparate. These conditions have elevated the policy and commercial appeal of reshoring certain manufacturing activities. However, there remains limited academic or sector-specific research that rigorously evaluates the economic viability of such a shift in the Australian caravan context

Problem Statement

The Australian caravan manufacturing industry’s reliance on offshore material inputs exposes it to freight volatility, geopolitical risk, and supply chain delays. The feasibility of reshoring key components remains unclear, particularly given SMEs' limited capital resources.

Research Objective:

To assess whether it is economically viable for the Australian caravan manufacturing sector to onshore the production of aluminium frames, composite cladding, and water systems, using TLC and NPV frameworks.

Research Scope and Delimitations:

This study focuses on material inputs exposed to high offshore supply risk (Southeast Asia). Inputs already secured via stable European or US supply chains are excluded. The study limits its assessment to the caravan sector and SMEs, recognising that scalability differs from larger industries.

Investment considerations and modelling rationale

While much of the existing reshoring literature focuses on static cost comparisons, this proposal recognises that investment feasibility depends not only on short-term cost parity but also on the long-term value generated by domestic production. Accordingly, the study applies both a TLC framework, to capture current operational competitiveness, and a NPV model to evaluate the financial viability of reshoring when capital investment is required. NPV accounts for the time value of money and supports more strategic reshoring assessment, particularly in capital-constrained sectors like caravan manufacturing. This dual-modelling approach fills a gap in both the Australian and global literature, where dynamic investment appraisal is rarely integrated into industry-specific reshoring analyses.

Reshoring decisions are multidimensional and shaped by cost, control, policy, and flexibility drivers (Fratocchi et al., 2016). This study focuses primarily on the economic viability dimension, using cost and capital modelling to assess whether investment in onshore caravan sub-component manufacturing is justified.

Research Aim and Objectives

This research study aims to assess the economic viability of onshoring the manufacturing of material inputs used in caravan sub-components in Australia. Specifically, the study will:

1. Evaluate the total landed cost TLC of importing key materials for caravan frames, compared with domestic manufacturing under different production scenarios.
2. Identify critical factors influencing cost parity, including raw material access, labour inputs, freight, energy costs, and automation.
3. Capture qualitative perspectives from industry stakeholders on constraints and enablers to reshoring in the Australian context.
4. Assess the strategic implications of reshoring from a supply chain resilience and regional economic development perspective.
5. To evaluate reshoring feasibility through short-term cost comparison and long-term capital return modelling.

Research Question

Primary Research Question:

Is it economically viable for the Australian caravan manufacturing industry to onshore manufacturing processes for key caravan material and sub-components?

Secondary Research Questions:

- What are the current cost structures associated with importing versus manufacturing domestically?
- What capabilities or policy incentives are required to make onshoring competitive?
- What risks are mitigated (or created) by moving supply chains back onshore?
- How do qualitative operational considerations influence the theoretical viability of reshoring?

Hypotheses:

- H1: Onshoring select components can result in positive NPV when factoring in logistics risks and government subsidies.

- H2: Firms prioritising reliability, quality assurance, and rapid fulfilment will exhibit higher willingness-to-pay for onshored components.

Research Significance

This study is both academically and practically significant. Academically, it seeks to contribute to the growing literature on reshoring and supply chain reconfiguration, extending it into an area that is largely not analysed, mid-sized, highly integrated consumer-durable manufacturing in high-income countries. It applies analytical tools typically used in automotive or electronics reshoring studies to the caravan industry, thus broadening the application of established models.

From a practical view, the findings will be directly relevant to caravan manufacturers, supply chain analysts, investors, and policymakers. The insights generated can help inform:

- Capital investment decisions in tooling, automation, and workforce development
- Policy recommendations for reshoring incentives under programs like the National Reconstruction Fund
- Regional development strategies tied to advanced manufacturing hubs
- Risk mitigation planning in future national resilience initiatives

The overlap of economics, industrial capability, and policy reform makes this research timely and important.

Literature Review

Global Trends in Onshoring

The resurgence of interest in reshoring and onshoring has gained momentum following global disruptions that began with the COVID-19 pandemic. Literature identifies multiple drivers, supply chain risk mitigation (Gereffi, 2020), rising transportation and container costs, and a strategic pivot toward national resilience (Srai & Kumar, 2021). According to the OECD (2021), firms are

increasingly evaluating not just unit cost efficiency, but the total landed cost and the value of supply continuity.

Empirical studies show mixed outcomes. While countries such as Germany have successfully revitalised key industries through coordinated industrial policy, others face high input costs and productivity challenges. Manufacturing sectors in high-wage economies have struggled to offset labour cost differentials without automation (Pisano & Shih, 2012).

Australian Manufacturing Landscape

Australia's manufacturing contribution to GDP has declined from 15% in the 1980s to under 6% today (ABS, 2023). However, government-led programs, like the Future Made in Australia and the National Reconstruction Fund, signal a political desire to revive strategically significant capabilities. Key focus areas include food processing, resources technology, medical products, and clean energy.

While significant to the country's GDP, caravan manufacturing sits outside of any policy support for manufacturing uplifts or innovation injections. The industry however intersects with regional employment, advanced manufacturing (via composites and automation), and sovereign capability objectives. Yet, there is little empirical research into its supply chain or import substitution potential.

Supply Chain Risks and Strategic Vulnerabilities

Supply chain resilience theory underscores the trade-offs between efficiency and robustness (Sheffi, 2005). In highly fragmented sectors, single-source dependencies create choke points. For Australian caravan manufacturers, dependencies on Chinese aluminium, imported suspension systems, and proprietary electronics pose risks not only in terms of cost volatility but also production continuity.

Theoretical models such as the "Kraljic matrix" can categorise caravan inputs by risk and impact to identify ideal sourcing strategies. Inputs that are high-risk and high value, such as chassis systems, may warrant localisation despite cost premiums. Onshoring thus becomes an exercise in risk-adjusted cost optimisation, not mere price matching.

Cost Economics of Onshoring

Onshoring feasibility must be evaluated using comprehensive economic frameworks. NPV analysis enables a multi-year comparison of total cost profiles, while real options modelling incorporates the value of strategic flexibility in uncertain environments (Trigeorgis & Tsekrekos, 2018). Studies also highlight the need to factor non-monetary variables such as lead time reduction, brand credibility from 'Australian Made' labelling, and agility in design customisation.

Reshoring and Supply Chain Vulnerability

Reshoring, defined as the repatriation of previously offshored manufacturing operations, has re-emerged as a critical policy and business strategy in response to recent global shocks (Barbieri et al., 2017). These include the COVID-19 pandemic, the 2021–22 global shipping crisis, rising geopolitical instability, and inflationary pressures on logistics and energy. Bailey and De Propris (2014), analysing the UK automotive sector, argue that reshoring decisions are not solely driven by labour cost convergence but increasingly by risk mitigation and time-to-market considerations. These findings have particular relevance for caravan manufacturers, who rely on synchronised part delivery and local assembly pipelines. While Australia shares structural similarities with the UK, namely its high-cost labour environment and developed policy framework, it also suffers from limited scale, fragmented domestic suppliers, and weak economies of agglomeration, all of which are crucial in GPN analyses.

Cost Structures and Modelling

A key barrier to reshoring is the comparative cost of production between offshore and domestic suppliers. Kudrenko (2024) argues that in high-cost economies, reshoring is only viable where automation or logistical advantages offset wage differentials. His study models reshoring scenarios using TLC, which accounts for production, transport, tariffs, delays, and exchange rate volatility. The framework is ideal for application in this proposal, where the caravan industry must assess whether producing a composite wall panel in Melbourne or Queensland (factoring energy costs, skilled labour, machine depreciation) can outcompete importing it from Guangdong, China.

Kinkel (2012) finds that 25–30% of German manufacturing reshoring cases involved "cost miscalculations" at the point of offshoring, often due to ignoring indirect costs like quality issues,

communication lags, or rework. For Australian caravan manufacturers, who operate with thin margins and relatively small batch sizes, these indirect costs, especially related to freight and quality assurance, could tip the economic equation in favour of domestic production.

Further, Singh et al. (2005), analysing the Australian automotive supply chain, underscore the weakness of low-volume supply environments. They identify core risks in single-source dependencies and insufficient domestic tooling investment. Although written pre-pandemic, their insights mirror the caravan industry's exposure to overseas suppliers of critical sub-components and the resulting systemic fragility.

Regional Capability and Industry Readiness

While cost comparisons are foundational, reshoring literature consistently stresses the importance of local manufacturing readiness. Tang and Veelenturf (2017) note that reshoring without workforce, equipment, or policy support leads to stranded investment. This is particularly relevant in Australia, where the closure of the automotive sector (2016–17) decimated much of the medium-scale industrial capacity that caravan manufacturers now require. Regional capability includes not only skills and facilities but the institutional infrastructure to support modern supply chain integration i.e., freight corridors, fabrication hubs, and low-emissions energy.

Singh et al. (2005) warned that Australia's automotive Tier 1 and Tier 2 supply base lacked vertical integration, creating systemic exposure to offshore Tier 0 suppliers. The same vertical thinness characterises the caravan industry today. Unless reshoring efforts are scaffolded by regional investment and industrial coordination, manufacturers risk transferring cost pressures without reducing supply vulnerability.

Case studies such as the Norwegian Innovation Cluster (Lund & Steen, 2020) and the UK's Advanced Propulsion Centre (Bailey & De Propris, 2014) offer policy-relevant frameworks. In both, public-private collaboration mitigated the "valley of death" between reshoring aspiration and implementation.

Strategic Drivers Beyond Cost

While cost viability is this study proposal's focus, it is critical to note that reshoring is often driven by risk perception, consumer preference, and brand identity. In the US, reshoring narratives were accelerated by IP risk in China and the perception of strategic dependency (Kudrenko, 2024). In Europe, "Made in Country" policies and just-in-time fragility encouraged high-mix, low-volume producers to re-anchor in proximity to final assembly locations.

For caravan manufacturers, proximity can reduce not just transport costs but lead time uncertainty. It also enables greater integration of design and manufacturing, reducing engineering lead times and improving mass customisation capability. These are indirect benefits not always captured in TLC models but are decisive in product categories with high consumer variation and semi-custom designs—common in premium caravans.

Moreover, qualitative studies such as Quek and Wang (2017) caution against over-reliance on numerical cost models, advocating for scenario modelling that includes resilience benefits. This includes the value of agility, reputational control, and policy alignment (e.g., emissions reduction through local manufacturing) that cannot be reduced to per-unit costs.

Onshoring in the Australian Policy Context

Australia's recent policy narrative has shifted towards reshoring and sovereign manufacturing capability, particularly in light of COVID-era shocks. The establishment of the $15 billion National Reconstruction Fund (NRF) and the emphasis in the "Future Made in Australia" framework underscore a significant national pivot towards domestic value chain recovery. While these frameworks largely target critical minerals, defence, and clean energy, sectors like caravan manufacturing—linked to regional development and tourism infrastructure—are adjacent beneficiaries. However, there is minimal evidence of sector-specific modelling to evaluate where reshoring would be cost-effective versus where import reliance should remain.

Theoretical Frameworks and Methodological Alignment

This proposal's use of the TLC model aligns with reshoring cost evaluation frameworks developed in the literature (Kinkel, 2012; Kudrenko, 2024). TLC accounts for not only labour and input costs, but

also transport, duty, delay, warranty claims, and flexibility costs. It is a superior lens to simple unit cost comparisons, particularly in fragmented supply chains.

SME-Specific Reshoring Barriers and Behaviour

Much of the foundational reshoring literature focuses on large manufacturers with deep capital reserves and access to economies of scale. However, caravan manufacturers in Australia are primarily small to medium-sized enterprises (SMEs), often family-owned or regionally based. These firms operate on thinner margins, lack access to patient capital, and typically do not benefit from the vertical supply chain integration available to major automotive or aerospace players (Ali & Ng, 2017).

Barbieri et al. (2017), in a comprehensive review of SME reshoring behaviour across Europe, find that the most common barriers to reshoring for SMEs include:

- High upfront capital requirements for retooling or automation
- Limited in-house technical skills for domestic production transitions
- Difficulty in forming local supplier partnerships or joint ventures
- Weak access to government funding due to scale or awareness issues

In Australia, these barriers are exacerbated by regional dispersion and the collapse of support industries following the automotive exit in 2016–2017. Caravan manufacturers who once relied on ex-automotive tooling shops or plastics engineers now find themselves facing capability gaps. Singh et al. (2005) and Tang & Veelenturf (2017) warn that without policy-coordinated investment in SME capability-building, reshoring risks becoming either aspirational or short-lived.

One further issue is that SMEs are more likely to operate with “rule of thumb” or experiential cost logic, rather than structured cost models. This suggests that academic models (e.g., Total Landed Cost or NPV) must be paired with stakeholder interviews to validate not only the numbers but the perception of viability.

Gaps in the Literature

While there is a strong theoretical base on reshoring and supply chain resilience, there remains limited empirical work applying these models to niche but nationally relevant sectors like caravans. Most studies focus on automotive or electronics industries. No existing research combines cost modelling with stakeholder data to analyse onshoring feasibility in Australia's caravan sector.

In addition to foundational works by Gereffi (2020), Pisano & Shih (2012), and Sheffi (2005), recent scholarship provides valuable insight into operational complexity and strategic evaluation models. For example, Childe et al. (2005) analyse value chain linkages and integration in supply chain networks, while Kurniawan et al. (2017) investigate supply chain performance optimisation in fragmented industries. Similarly, Fayezi et al. (2017) offer frameworks for balancing strategic alignment and resilience capability, which are directly relevant to this study's dual focus on cost viability and reliability.

Research Design and Paradigm

Research Paradigm:

Pragmatic mixed-methods approach, blending quantitative TLC/NPV modelling with qualitative stakeholder interviews.

Quantitative Modelling:

- **TLC**: Compare landed costs (offshore vs domestic) across three sub-components. Includes material, labour, freight, duty, inventory, and risk premiums.
- **NPV**: Model initial capital investment against annual cost savings over 5–10 years at a 7% discount rate, testing for financial viability under base and sensitivity scenarios.

Qualitative Interviews:

5-10 semi-structured interviews with caravan manufacturers, supply chain specialists, and industry leaders to validate assumptions and capture operational realities.

Data Sources:

ABS, IBISWorld, OECD, CIAA reports, targeted primary data from interviews.

Analytical Extensions:

Future research may incorporate Real Options Thinking (ROT) to model flexible investment decisions under policy or freight uncertainty.

Research Framework and Methodology

The quantitative component is central to this study because the term "economic viability" inherently requires structured, comparable cost modelling. Without a financial assessment, discussions of reshoring remain speculative. The two techniques are employed to address both the immediate cost comparison and the long-term investment return aspects of reshoring. TLC is well-established in supply chain management and reshoring literature as a comprehensive framework for comparing domestic and offshore sourcing. It includes not just per-unit manufacturing costs but also freight, customs, currency risk, reject/rework costs, inventory holding, and logistics volatility (Kinkel, 2012; Kudrenko, 2024).

NPV complements TLC by introducing a longitudinal investment lens. Onshoring may require upfront capital investment in tooling, automation, or reconfiguration of facilities. NPV accounts for these costs over time, factoring in expected savings, cash flows, and the time value of money. While TLC answers, "Is it cheaper now?", NPV answers, "Is it worth the investment in the long run?" (Bailey & De Propris, 2014; Tang & Veelenturf, 2017).

Data Requirements and Analysis Methods

The quantitative model requires data on:

- Unit cost of key components (e.g., chassis, aluminium walls, cabinetry hardware) sourced offshore and domestically;
- Shipping, insurance, and import duty costs;
- Historical and forecasted exchange rates;
- Domestic wage and overhead structures;

- Tariff benefits, if any, for localised manufacturing;
- Government subsidies and grants (e.g., Modern Manufacturing Initiative).

Sensitivity analysis will evaluate the robustness of results under varying cost inputs and risk premiums.

Qualitative data will involve interviews and a potential survey of 25–50 respondents. Questions will target senior personnel in manufacturing, procurement, engineering, and logistics roles. Topics will include perceptions of resilience, trade-offs in sourcing decisions, and future outlooks.

Data Sources and Collection Methods

Primary Data: Industry Interviews

The primary data will be collected through semi-structured interviews with key industry stakeholders. These interviews aim to supplement the economic modelling by providing contextualised insights into:

- Current sourcing arrangements and supplier relationships
- Estimates of domestic production feasibility
- Perceptions of freight cost volatility and quality control challenges
- Attitudes towards investment in automation or tooling for local production
- Opinions on policy incentives (e.g., the National Reconstruction Fund)

Participants will include:

- Senior executives and procurement leads from caravan OEMs
- Managers from key suppliers (aluminium, plastics, composites)
- Industry experts from associations such as the Caravan Industry Association of Australia
- Select policymakers or advisors involved in industrial policy or advanced manufacturing

Participants will be contacted directly via email and provided with a detailed interview guide and consent form in line with UNE ethical requirements. Interviews will be recorded (with consent), transcribed, and coded for thematic analysis.

4.2 Secondary Data: Cost Model Inputs

The TLC model will require accurate, recent data on a wide range of cost factors. The following secondary sources will be used:

- Australian Bureau of Statistics (ABS): Industry-specific wage rates, input-output tables, energy costs
- IBISWorld Industry Reports: Caravan manufacturing (C2499), aluminium and plastic manufacturing trends
- OECD Logistics and Freight Indices: Historical and projected containerised freight rates
- World Bank and WTO Tariff Schedules: Import duties and trade agreements relevant to aluminium, composite plastics, and raw materials
- Customs and Import Data: Sourced from the Department of Home Affairs and data.gov.au to validate historical import volumes and average CIF (cost, insurance, freight) values

Additionally, case studies and benchmarking data from reports by Deloitte, McKinsey, and Austrade will be used to estimate capital costs for retooling, automation adoption, and expected productivity differentials.

Total Landed Cost (TLC) Model Design

The TLC model includes direct material costs, labour, freight, tariffs, reject rates, and currency risk. It will be applied to aluminium frames, cladding, and water tanks under base and sensitivity scenarios using data from ABS, IBISWorld, OECD, and industry interviews.

The TLC model will be developed for three caravan sub-components:

1. Aluminium chassis frames

2. Composite or fibreglass external cladding panels
3. Moulded plastic water tanks

Each component will be assessed under two sourcing scenarios:

- Offshore sourcing, based on current import costs from Asia (e.g., China, Thailand)
- Domestic manufacturing, modelled using Australian wage rates, energy prices, and estimated production overheads

Scenario modelling will include:

- Base case (2024 costs)
- Volatile freight scenario (+40% shipping)
- Domestic incentive scenario (with grant offsets or energy discounts)

Net Present Value (NPV) Investment Model

The NPV model calculates the present value of reshoring investments, comparing initial capital outlays with forecasted annual savings over a 5–10 year horizon. A 7% baseline discount rate is used, with sensitivity tests at 5% and 10%. This provides a long-term investment assessment beyond static cost comparisons.

The NPV model will be applied to each of the three sub-components and compared against the TLC break-even analysis. This offers a deeper view into strategic capital viability, especially relevant for SMEs considering co-investment, policy support, or debt-financed equipment upgrades.

Qualitative Interviews

To contextualise the modelling and capture real-world constraints, 5–10 semi-structured interviews will be conducted.

Interview questions will focus on:

- Current sourcing strategies and vulnerabilities

- Willingness to consider reshoring under various conditions
- Perceptions of cost, capability, and lead time trade-offs
- Barriers to domestic production (e.g., workforce, tooling, capital)
- Opinions on the value and impact of government reshoring incentives

Interviews will be recorded (with consent), transcribed, and analysed using thematic coding in NVivo. Common themes (e.g., freight anxiety, policy dependency, workforce barriers) will be compared to model results to highlight areas of alignment or tension.

Integration and Triangulation

A key strength of the methodology is its integration of cost models with stakeholder insight. This triangulation ensures that reshoring viability is assessed not just as a financial model but as a grounded strategic possibility.

Analysis will compare:

- TLC and NPV outcomes (quantitative)
- Stakeholder readiness, attitudes, and constraints (qualitative)
- Policy sensitivity — e.g., how changes in tax offsets, energy rebates, or freight relief shift the NPV or TLC outcomes

This integrative approach is essential in assessing implementation realism, especially in SME-dominated sectors like caravans where theoretical viability may be constrained by practical capacity.

Ethical Considerations

Ethical clearance will be obtained from the University of New England's Human Research Ethics Committee. Interview participants will be:

- Informed of the study's purpose, confidentiality measures, and voluntary nature
- Required to sign consent forms before participation

- Offered anonymised inclusion and the right to withdraw at any time

Data will be securely stored, and transcripts will be destroyed after 12 months, as per UNE protocols.

Scope of Analytical Methods

While advanced decision-modelling techniques such as Monte Carlo simulation, Real Options Analysis, and Delphi forecasting were considered during the methodological design phase, they have been excluded from the current research scope. This decision reflects both the practical constraints of the project timeline and the applied nature of the research problem. The study is designed for completion within a 14-week postgraduate framework and aims to deliver actionable insights into reshoring viability.

Limitations of Methodology

- TLC models are sensitive to assumptions, and while efforts will be made to source accurate data, some estimates (e.g., offshore production costs) may have margin of error
- Interviews are limited to a small pool and may not fully capture the diversity of views across the sector
- The study does not include a longitudinal or experimental design; it is static and scenario-based

Despite these limitations, the approach provides a rigorous and pragmatic framework to evaluate reshoring feasibility in an applied industry context.

Dissertation Structure

The dissertation will be structured into six chapters, following a logical progression from contextual framing through to economic modelling, qualitative insights, integrated analysis, and policy implications. Each chapter will contribute to answering the central research question: *Is it economically viable for the Australian caravan manufacturing industry to onshore manufacturing processes for key caravan material and sub-components?*

Chapter 1: Introduction

This chapter will outline the research background, define the problem, establish the research objectives and questions, and explain the significance of the study. It will introduce key terminology (e.g., reshoring, sub-components, TLC) and provide an overview of the methodological approach.

Chapter 2: Literature Review

A critical review of academic and applied literature relating to reshoring, supply chain risk, Total Landed Cost modelling, and global production networks. It will focus on insights from the automotive, modular housing, and recreational manufacturing sectors, and identify gaps relevant to the caravan industry.

Chapter 3: Methodology

This chapter will present the research paradigm, design, and methods. It will detail the Total Landed Cost modelling approach, justify the mixed-methods strategy, and describe the procedures for data collection, ethical considerations, and analysis.

Chapter 4: Results

Quantitative results from the cost model and qualitative findings from interviews will be presented here. Sensitivity analysis will be used to test the robustness of results under different input conditions.

Chapter 5: Discussion

This chapter will synthesise findings, compare them with literature, and analyse policy implications. It will explore trade-offs, strategic insights, and practical barriers to reshoring.

Chapter 6: Conclusion and Recommendations

The final chapter will summarise the findings, reflect on limitations, and offer recommendations for policymakers, industry leaders, and future researchers.

Timetable

The proposed research will be completed over a 14-week period, aligned with the academic trimester structure and submission deadlines of the Master of Economics dissertation component. The schedule allows for iterative data collection, analysis, and academic supervision milestones.

Week	Activities
1–2	**Final Topic Definition and Literature Refinement** • Review supervisor feedback and finalise research questions • Expand the literature review to incorporate the latest reshoring and supply chain modelling insights • Confirm the analytical frameworks (Total Landed Cost and Global Production Network)
3–5	**Model Design and Ethics Submission** • Construct initial Total Landed Cost (TLC) model using secondary data (ABS, IBISWorld, OECD) • Define key assumptions and sensitivity parameters • Draft and submit Human Research Ethics Committee (HREC) application for interviews • Prepare interview guide and consent forms
6 - 8	**Data Collection** • Conduct 5–10 semi-structured interviews with caravan manufacturers and supply chain experts • Continue refining TLC model with updated input data and feedback • Transcribe and begin preliminary coding of interviews
9 - 10	**Clean data**
10-11	**Data Analysis** • Finalise TLC cost comparisons and scenario testing • Complete thematic coding of interview transcripts

	• Begin triangulation of findings between quantitative and qualitative components • Perform NPV, sensitivity, and real options modelling
11-12	**Drafting the Dissertation** • Write chapters on Results and Discussion • Integrate insights from interview data into analytical sections
13-14	**Editing and Final Submission** • Complete all chapters, citations, appendices, and formatting • Submit draft for supervisor feedback • Finalise dissertation and submit

This structured timetable ensures balanced time allocation across research phases, with built-in flexibility for data delays or iterative revisions.

Strengths, Limitations, and Resource Requirements

Strengths

This proposal integrates financial modelling and stakeholder insight to provide a holistic view of the feasibility of onshoring. It directly responds to policy priorities in sovereign capability and regional resilience, using real-world economic evaluation techniques. The methodology ensures rigour in both empirical analysis and contextual interpretation.

Limitations

The study's scope is limited to a selected range of components and manufacturers due to time and data availability. Financial data on proprietary supplier costs may not be fully accessible, requiring triangulation through estimates and expert interviews. Sample sizes for qualitative data may also restrict generalisability.

Limitations and Trade-offs

Every research project encounters limitations that influence the scope, reliability, and generalisability of its findings. This study—while methodologically robust and practically grounded—is subject to

several such limitations. These arise primarily from data constraints, modelling assumptions, time constraints, and the complex nature of reshoring decision-making in a real-world industrial context.

While the research design and methods adopted in this study are robust and aligned with the research objectives, several limitations and trade-offs must be acknowledged. These pertain to the economic modelling, the qualitative data scope, and broader research feasibility within the academic timeframe.

Data Constraints

The TLC model is inherently sensitive to the quality and granularity of cost data. While secondary data will be sourced from authoritative outlets like the ABS, IBISWorld, and OECD, some cost elements—such as real-time import prices, domestic supplier margins, or factory-specific overheads—may not be available at the required detail. As a result, the model will involve estimations and assumptions, particularly around:

- Freight and logistics volatility over time
- Capital cost of domestic retooling
- Learning curves and production scaling
- Tariff elasticity and exchange rate forecasts

Although scenario and sensitivity analysis will mitigate some risk, the findings must be interpreted within the bounds of these limitations.

Both the TLC and NPV models rely on assumptions and data inputs that may vary significantly across firms. Freight rates, labour costs, and capital investment requirements differ depending on location, scale, and technological maturity. Public data sources such as the Australian Bureau of Statistics (ABS), IBISWorld, and OECD logistics reports offer industry benchmarks but may lack specific information. As a result, the cost models should be interpreted as indicative rather than deterministic.

To manage this limitation, the study will apply scenario modelling and sensitivity testing to account for a range of realistic input values.

Resource Requirements

- Access to IBISWorld and ABS databases;
- Support for transcription services (e.g., Otter.ai);
- Software for NPV modelling and simulation (e.g., Excel, @RISK);
- Survey platform (e.g., Qualtrics);
- Budget for potential travel or conference engagement with industry.

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Appendices

Appendix A – Sample Interview Guide

Target Participants:

Senior managers and operations executives from leading Australian caravan manufacturers and component suppliers.

Interview Topics:

1. Strategic sourcing decisions and supply chain configurations
2. Key dependencies on international components
3. Past disruptions and mitigation strategies
4. Feasibility perceptions regarding local sourcing or production
5. Policy or incentive mechanisms needed for onshoring viability

Appendix B – Sample Survey Items (Likert-scale and open-ended)

Section 1: Supply Chain Configuration

- What percentage of your sub-components are imported?
- Have you experienced supply delays or cost shocks in the past 3 years?
- Do you have alternative sourcing strategies currently implemented?

Section 2: Onshoring Perceptions

- Rate your agreement: “Local production of components would improve our supply chain reliability.” (1–Strongly disagree to 5–Strongly agree)
- Rate your agreement: “Government incentives are sufficient to support a transition to local supply.”

- Open-ended: What are the three biggest barriers to onshoring in your organisation?

Appendix C: Sample TLC Model Input Table

This sample input table outlines the comparative cost components used in the TLC analysis for evaluating offshore vs. domestic production of key caravan sub-components.

Cost Component	**Offshore (AUD/unit)**	**Domestic (AUD/unit)**	**Notes**
Direct Material Cost	$120	$140	Slightly higher raw material costs locally
Labour Cost	$15	$55	Reflects wage differential (Asia vs. Australia)
Overheads and Compliance	$5	$20	Includes energy, EH&S, ISO certification costs
International Freight & Insurance	$30	$0	Eliminated in onshoring scenario
Customs Duty (5%)	$8	$0	Based on CIF import value
Exchange Rate Buffer (AUD/USD)	$6	$0	10% margin for USD volatility
Inventory Holding (buffer stock)	$7	$3	Longer lead times require higher inventory offshore
Reject/Rework/Defect Cost	$4	$2	Based on historical failure rates (offshore vs. domestic QC)
Supply Delay Risk Premium	$5	$1	Estimated based on historical supply chain disruptions

Total Landed Cost (TLC)	$200	$221	Excludes capex — to be evaluated in NPV