Overview and Rationale

The Automotive Industry in 2006-2007 (as outlined in original IES) - Why was this industry selected?

In 2006-07 there were four main automotive companies with plants in Australia: Holden, Ford, Toyota (in Victoria) which also operated Australian design centres primarily designing cars for local markets and Mitsubishi manufactured in SA. The industry had a very tiered industry structure (from raw materials, to components to assembly operations, with many enterprises operating across tiers) and was supported by ancillary services including parts and fuels and finance suppliers as well as retail outlets. Major automotive manufacturers were based mainly based in North America, Europe (particularly Germany) and Japan. Industry contributed $21 billion Industry Value Add (IVA) annually and employed 310,000 people (IES estimates based on ABS data) but was facing increased competition from low cost countries (particularly China) and a number of auto conglomerates had formed. RMIT had strengths in research, learning and teaching in the industry.

The Automotive Industry in 2011 – Summary (Why should RMIT continue to focus on Automotive?)

Overall, the Australian automotive manufacturing industry is in decline. Increasing imports, rising input costs, a higher AUD and changing consumer preferences towards more efficient, imported vehicles has negatively affected profits of the major Australian automotive manufacturers and caused one (Mitsubishi) to abandon Australian manufacturing operations during the period. The Global Financial Crisis (GFC) has also compounded many of these issues and the automotive industry has experienced negative growth with reduced employment.

However, there are positive signs that the industry will remain a key Australian industry. While employment has been declining, the industry remains a significant employer through three major car manufacturers, three truck manufacturers, approximately 180 component, tooling, design and engineering companies (DIISR, 86) and with a comprehensive automotive supply chain encompassing manufacturing, retail sales, repair and servicing (MSA). Australian businesses recognise changing preferences and markets and seek to develop new opportunities.

Both state and federal governments have continued to strongly support the industry. New Commonwealth policies to create a more sustainable economy will also provide additional investment/impetus for R&D. A global business environment, accessing new markets, stronger focus on design and technology to meet changing customer preferences and, more broadly, a need to work closely with the Australian automotive industry to help them structurally adjust to rapid changes (including a possible need to reskill automotive workers into related industries) will continue to create opportunities for providers into the future.

Industry Snapshot

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<tbody>
<tr>
<td>Automotive manufacturers in Australia</td>
<td>4</td>
<td>3*</td>
<td>Employment: (Automotive only: excludes broader supply chain)</td>
<td>72,243 (May 06) (KAS)</td>
<td>52,692 (May 11) (KAS)</td>
</tr>
<tr>
<td>% of imported cars being purchased in Australia</td>
<td>70% (30% local IES)</td>
<td>85% (15% imported KAS)</td>
<td></td>
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</table>

* Mitsubishi ceased Australian operations in March 2008.
The automotive industry is the largest manufacturing industry in Australia and is a significant contributor to Australian economic activity. There are three major car manufacturers and approximately 180 component, tooling, design and engineering companies (DIISR) and three major truck manufacturers. While many indicators for this industry point to decline (discussed further below) the Commonwealth recognises the industry as a “strategically important part of the Australian economy” and that:

“Car-making drives demand, sustains capabilities and stimulates innovation across the manufacturing sector. In fact, it fuels activity across the entire economy, using $8 billion worth of service sector inputs in 2004–05 alone. The automotive industry makes a huge contribution – both direct and indirect – to Australian output, jobs, exports, innovation and skills. Its latent significance to national security – as a storehouse of industrial know-how and capability – is immeasurable” (Commonwealth, New Car Plan).

The Automotive manufacturing industry produced $5.2 billion of IVA in 2008-09 (4.9 per cent of IVA for the manufacturing industry) (Commonwealth, Key Automotive Statistics (KAS)). The industry is highly integrated and interdependent and globally engaged. The fortune of Australian components suppliers is closely linked to the fortune of the major Australian automotive primes. Each of the major Australian automotive primes (including the truck companies) are foreign owned. Domestically, Victoria accounts for 60 per cent of Australian vehicle assembly, 55 per cent of automotive manufacturing employment, 54 per cent of Australia’s total value-added auto exports and 60 per cent of Australian automotive output (by industry turnover) (Invest Victoria).

**Australian Automotive Industry Performance**

The industry is experiencing significant profitability and competition issues. Automotive imports are forecast to grow by 6.4 per cent annually over the next five years (IBIS 13 auto), with growth also predicted for automotive components (IBISWorld, parts). This is likely to further compound Australian market share and affect viability.

Australian vehicle manufacturers face challenges to adapt to the competitive pressures facing many international automotive producers and evolving global approaches to supply chain management (FCAI). For example, the local components used in domestic manufactured vehicles have reduced over time, as vehicle assemblers increasingly source components from overseas manufacturers (FAPM). Mitsubishi closed operations over the period, citing accumulated losses from the Australian operations of over $1.5-billion over the past ten years (The Age). This further raised issues regarding supplier viability, with FAPM noting that:

“Any further reduction in the number of motor vehicle producers, or indeed the number of vehicles produced annually by the vehicle manufacturers will most likely result in components sector businesses facing viability issues” (FAPM).

The GFC: In 2008-09 the global industry contracted, with issues in the US due to recession, the precarious employment situation and a lack of credit, which pushed the annual sales rate for US car sales to their lowest level (Lucintel, Automotive). There were flow on negative effects in Australia, with Australian car production falling by 27 per cent in 2008-09. For example, in June 2009 US General Motors (GM – GM Holden in Australia) filed for Chapter 11 bankruptcy protection, citing that it had $172.81 billion in debt and $82.29 billion in assets. GM emerged from reorganisation, with financing partially provided by the US Government, however, cancelled the Pontiac export program for GM Holden in Australia.

Other key pressures affecting the market include:

- **Less local demand for Australian-made cars:** In 2010, 1,035,574 new motor vehicles were sold in the Australian market (DIISR, Portfolio Statement), of which 14.1 per cent were locally produced – down from 30 per cent in 2006 (IES, citing FAPM).
• **Less Australian-based manufacturing:** 242,941 motor vehicles were produced in Australia in 2010 – up from 218,258 in 2009, but significantly down from 387,821 in 2005.

• **A higher Australian dollar:** is having a negative effect on trade-exposed industries such as manufacturing (and further fanning demand for imports).

• **Increasing costs of inputs:** Motor vehicle manufacturing relies on steel and iron as key inputs. The prices of these inputs have been increasing which affects profitability.

• **Increasing world price of crude oil:** Fuel prices affect demand for motor vehicles as consumers change preferences and alter driving habits. Oil and petrol prices have been increasing over the period and are likely to continue to increase. This has contributed to an increased focus on more efficient processes and products (see further Technology). Freight companies have been trying to offset rising costs of production through fuel surcharges and by reducing expendable costs such as replacement trucks.

• **Reduction in automotive tariffs:** In 2010, tariffs were reduced from 10 per cent to 5 per cent in 2010, which has also contributed in making imports more appealing to consumers.

• **Recent disasters in Japan** (earthquakes, tsunami, nuclear crisis) have an ongoing impact on global supply chains, particularly affecting Japanese-owned Toyota.

• **Impact of the Carbon Tax on the Industry:** Price Waterhouse Coopers estimated that the impact of the Commonwealth’s carbon pricing proposals could be to be in the order of $30m-$84m per year depending on various factors including compensation, with the industry having little capacity to pass on the cost burden (PWC). Given the trade exposed nature of the automotive industry, there is little or no scope for vehicles and component producers to pass these additional costs on through the supply chain.

• **Changing consumer preferences:** many Australian manufacturers were geared towards larger passenger cars. However (particularly in the wake of increasing fuel costs) Australian consumers have increasingly been demanding smaller, more efficient vehicles.

**Other global pressures/changing markets:** However, while emerging economies pose risks to Australian operations, they also provide new opportunities. Both China and India have significantly increased their production and demand for vehicles in these countries is increasing. While exports have been growing more slowly (as production meets their growing local demand) (DIISR) it would seem likely that these countries will continue to grow to create further global competition. The traditional automotive centres of the US, Japan and Europe have reduced their production of higher-value, export-orientated vehicles (DIISR, factsheet). Other Asian countries are also increasing their production – eg imports from Thailand have been growing since GM established a plant there (IBISWorld).

**Industry Outlook**

Despite weaknesses in manufacturing, the global industry continues to offer opportunities, driven by demand from the BRIC nations (Brazil, Russia, India and China) which are anticipated to drive the future growth for the automotive market sales (Lucintel, Automotive). These changing markets are also leading to shifts in the product mix which can create opportunities for industry participants able to recognise these shifts.

Australian automotive exports grew to record levels in 2008 with over 160,000 vehicles exported to markets including the Middle East, the America’s and Europe. The value of these exports has continued to rise with total automotive exports worth $5.8 billion (FCAI). Key markets for Victorian passenger vehicles are the Middle East and New Zealand, while Victorian engines are exported to markets across Asia, Europe and the Americas. IBISWorld forecasts that exports will grow by 8.1 per cent annually over the 5 years through 2015-16 but that they will decline 2.4 per cent annually for parts (IBIS). Australian companies which are able to find overseas markets for their products are more likely to survive. For example, Toyota has had a stronger performance over the period compared to its counterparts due to trade: it is anticipated that each of the primes will continue to focus on export markets in a bid to shore up their businesses (IBIS 12).
Changing Australian manufacturing: All three of the majors have plans (or are producing) at least one fuel efficient vehicle e.g. Production of the Hybrid Camry began at Toyota’s Altona plant in February 2010.

Commonwealth and state support will help the industry find new markets and develop new products.

Sustainability: Regulatory standards vary globally, which can make it more challenging for automotive suppliers navigate markets and ensure their products meet each standard (KPMG). For this reason, being world leaders could help global competitiveness (IBISWorld).

Other opportunities: The Victorian Competition and Efficiency Commission inquiry into manufacturing heard that “automotive suppliers are seeking to diversify into other advanced manufacturing areas such as the supply of green energy components to the power generation sector” (VCEC).

- **Buses**: demand has been growing over the past five years (linked to increasing fuel costs and changing driving habits) – although the market is saturated (IBISWorld).
- **Utes**: Demand has been growing as these are used in business sectors like construction (IBISWorld).

**Employment and workforce**

The Commonwealth (using ABS statistics) notes that automotive industry is a major employer in Australia, with over 52,000 people working in the motor vehicle and parts manufacturing sector alone. More broadly, the sector supports jobs down the automotive supply chain, with the MSA estimating that upwards of 350,000 people are supported by the industry (MSA). Using direct automotive industry employment figures from the Commonwealth (see Table 1), it can be seen that employment in the industry is in decline and has decreased by 29 per cent from 2006 to 2011.

**Table 1: Automotive Industry Employment 2006 - 2011**

<table>
<thead>
<tr>
<th>Year</th>
<th>May 06</th>
<th>May 07</th>
<th>May 08</th>
<th>May 09</th>
<th>May 10</th>
<th>May 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. employed</td>
<td>74,243</td>
<td>70,633</td>
<td>63,299</td>
<td>46,821</td>
<td>53,263</td>
<td>52,692</td>
</tr>
</tbody>
</table>

The MSA has also found that apprentice and trainee commencements in both automotive training packages are down (see below).

**Socio-cultural** Social factors include the cultural aspects and include health consciousness, population growth rate, age distribution, career attitudes and emphasis on safety.

**Population**: Similar to most developed countries, Australia's overall population is ageing due to sustained low fertility and increasing life expectancy. The average age of manufacturing workers is increasing which creates skills shortage pressures into the future.

**Sustainability**: Increased social focus on environmental concerns contributes to the push for more efficient automotive products and production methods. Rising fuel costs are changing consumer preferences and more fuel efficient and hybrid vehicles (including converting petrol engines in existing cars to run on liquefied petroleum gas (LPG) hoping to save money on their fuel bills (IBISWorld).

**Consumer preferences**: As noted above, consumer preferences vary in line with increasing customer expectations. Car makers increasingly try to meet (or exceed) these expectations by providing consumers with more choice (e.g. more colours, gadgets, customisations). The spread of IT applications and entertainment applications is also applicable to this industry.

**Safety**: road safety awareness leads to increased safety focus (for consumers and car makers).

**Housing and urban commuting**: Analysis of 2001 and 2006 Census journey to work data for Sydney, Melbourne and Perth shows that urban commuting patterns became increasingly complex over the period, with strong growth in
outward and cross-suburban commutes (Commonwealth, State of Australia’s Cities). Longer commute times and rising fuel costs increase focus on public transport and more fuel efficient vehicles.

**Technological**

Technological factors include aspects such as R&D activity, automation, technology incentives and the rate of technological change. They can determine barriers to entry, minimum efficient production level and influence outsourcing decisions.

Innovation is recognised as key tool to support the industry compete in an increasingly competitive global market. IBISWorld classifies motor vehicle manufacturing as a high technology change industry, and Automotive Parts and Accessories as a medium technology change industry. The automotive industry spent $649 million in 2008-09 on R&D (Cth Auto factsheet) and each of the three manufacturing primes maintain a design centre in Australia (all are based in Victoria). The Commonwealth’s New Car Plan’s focus on enhanced skills development and global engagement and increased investment is based on increased innovation to develop “new and better products, new and better ways of producing them, and new and better ways of marketing them to the world” (Commonwealth, New Car Plan).

**AutoCRC and Technology Roadmap**

The Cooperative Research Centre for Advanced Automotive Technology (AutoCRC) was created in December 2005, and continues to support &R&D and networks across the industry. The AutoCRC (in consult with the AIIC) has produced a technology roadmap for the industry which identifies these priorities:

- Vehicle electrification, including hybrid and electric vehicles (identified as the most important)
- Gaseous fuels, including three applications which could be realised through the development and design of an Australian gaseous fuel vehicle platform, such as a high capacity, low cost, on-vehicle CNG storage tank
- Lightweighting, with five applications being identified, such as reducing vehicle structure weight by 30 per cent while enhancing safety
- Advanced data and communication systems, increasing the availability of in-vehicle information and use of onboard electronics (Automotive Australia 2020 - automotive technology roadmap).

**National Research Priorities and Activities**

The National Research Priorities are unchanged since 2002 and include “frontier technologies for building and transforming Australia”. The 2010 Cooperative Research Centres (CRC) Program selection round focused on manufacturing and social innovation. The Automotive Australia 2020 CRC (AA2020CRC) proposal was successful (for which RMIT is a research partner) and was awarded $26 million over 5 years to build on key priorities identified in the Technology Roadmap. It is expected to commence operations on 1 July 2012. The CSIRO notes the application of advanced materials, processes and computational tools can address challenges such as weight reduction, durability, fuel consumption, greenhouse gas emissions, logistics, cost reduction and manufacturing lead-times (CSIRO).

Other activities over the period include:

- In 2009 the CSIRO established a ‘Future Manufacturing’ research flagship “to lead the development of cleaner advanced materials and manufacturing technologies” (CSIRO Flagship).
- The CSIRO is also researching alternative fuels and advanced battery technologies to power Australia’s transport into the future.
- Victorian Centre for Advanced Materials Manufacturing (VCAMM) established a multi-million dollar, state-of-the-art Innovation Centre to support new opportunities in innovation and research for Victoria’s quality-driven manufacturing industry (VCAMM).
- Manufacturing CRCs include: Advanced Manufacturing CRC (funded 2008); CRC for Advanced Automotive Technology (funded 2005) and the CRC for Polymers (funded 2001).
- Automotive Research and Testing (ACART): ACART’s research and development activities are focused on achieving improved fuel consumption and lower emissions for passenger vehicles and trucks. ACART provides the local automotive and transport industries with state-of-the-art infrastructure and highly skilled personnel for advanced automotive research and testing.

Policy and Planning Group, Automotive Industry Environmental Scan
The ‘light weighting’ technology trend identified in the roadmap can be seen through activities such as:

- A new $100 million centre Australian Future Fibres Research and Innovation Centre is being established at Deakin University (with the CSIRO and the Victorian Centre for Advanced Materials Manufacturing). The Centre will focus on a range of innovative materials including nanomaterials, smart fibrous materials, green natural fibres and carbon fibre and be capable of producing commercial quantities of aerospace quality carbon fibre.
- Composites CRC: Since its inception in 1991, it has grown to become one of the world’s leading composites research organisations. The partnership includes leading composites businesses, government research laboratories and Australia’s foremost universities in composites research. RMIT was a key player in establishing the CRC for Advanced Composite Structures and remains a major participant. The research focus is the design and through-life assessment of aerospace and marine structures made with polymer matrix composites.

**Advanced Manufacturing and Other trends/points**

The MSA notes that new directions for manufacturing include: rapid or direct manufacturing, nanotechnology and computer simulation programs with aerospace trends including increased integration of aircraft mechanical and electrical/electronic components and systems, advanced avionics (diagnostics) systems and engineering excellence.

The MSA scan also recognises other changes expected in the next five years including “active safety warning/intervention systems, credit card style keys, navigation systems employing GPS and onboard DVDs, wi-fi hook ups and voice command technology, amongst others” (MSA).

Other changes to note include:

- Advanced manufacturing including additive manufacturing capabilities can also be employed in the aerospace industry. RMIT recently opened its new Advanced Manufacturing Precinct and hosted the inaugural Pacific Additive Manufacturing Forum.
- Another trend in automotive industry is in producing zero-emission vehicles, probably powered by batteries. (Lucintel, Automotive).

**Sustainability**

Trends in consumer preferences and political incentives for sustainability are creating a priority R&D focus for the industry. The Commonwealth’s proposed Clean Energy Package has significant investment in R&D for cleaner practices. The MSA has found that enterprises are increasingly seeking ways to make their business more ‘sustainable’ including changing seeking to change practices or provide greater product choice. MSA also notes it is likely that this focus will require broader focus on the product’s lifecycle, e.g. re: end-of-life recycling and disposal of vehicles (MSA).

Products which are more light weight (thus resulting in a more fuel efficient vehicle) and products which are manufactured through faster, more efficient processes which have fewer emissions and less labour costs will remain a focus as the industry seeks to reduce costs and boost competitiveness. For the components sector, opportunities are likely to lie in regenerative braking, automatic and semi-automatic transmissions” (PWC).

**Safety:** Huge investment by manufacturers has assisted in driving down fatalities, with safety “remaining central to automotive product development plans. Making sure older vehicles are replaced with the latest generation of safer, more efficient models, is one way to deliver further progress” (FCAI).
Other general trends in the industry (identified by the MSA) could point to other technology change opportunity areas:

- Hybrid and electric technologies
- Alternative fuels
- High strength steels
- Fibre composites
- Electronic management of vehicle controls and fuel management systems
- Leadership and management
- Customer retention strategies
- Compliance
- Analytical and diagnostic skills
- Supply chain management
- Existing worker training
- Technology upgrades
- Lean manufacturing
- Sales
- Heavy Vehicle Maintenance
- Body materials technology
- Drive train technology
- Satellite navigation, telematics, communication, security and voice recognition
- Gas Technology

**Political factors**

Political factors are how and to what degree a government intervenes in the economy, including tax policy, labour law, environmental law, trade restrictions, tariffs, and political stability.

The manufacturing industry is currently a strong focus for Australian governments, with the manufacturing industry going through a period of adjustment (see Economic). This is particularly so for the automotive industry. Both Federal and State Governments collectively support the industry through funding programs and policy support every year.

**Commonwealth Support**

The Commonwealth maintains a dedicated policy unit with significant programmatic and policy support for the industry. The key automotive policy changes over the period centre on the 2008 review into the automotive industry (the Bracks Review). The Commonwealth’s response can be found in the *New Car Plan*, which has these features:

- a new, better targeted, greener assistance program, the Automotive Transformation Scheme (ATS), running from 2011 to 2020–21 and providing $3.4 billion to the industry
- changes to the Automotive Competitiveness and Investment Scheme in 2010 to smooth the transition to the ATS ($79.6 million)
- $116.3 million to promote structural adjustment through mergers and consolidation in the components sector and facilitate labour market adjustment
- $20 million from 2009–10 to help suppliers improve their capabilities and their integration in complex national and global supply chains
- $6.3 million from 2009–10 for an enhanced market access program
- a new Automotive Industry Innovation Council, bringing key decision makers together to drive innovation and reform and
- a $10.5 million expansion of the LPG vehicle scheme that doubles payments to purchasers of new private use vehicles that are factory fitted with LPG technology.
- Every dollar contributed by the Australian taxpayer will be matched several times over by contributions from the private sector (Commonwealth, New Car Plan).

Although, following the 2010-11 floods and other natural disasters, the Government announced changes to programs, including terminating certain industry assistance programs, including the Green Car Rebate Scheme and the Green Car Innovation Fund (saving around $1 billion) (Productivity Commission).

Other key Commonwealth activity over the period includes:

- **Clean Energy Package**: In 2011 the Commonwealth’s Clean Energy Package passed parliament. The Commonwealth’s carbon pricing mechanism will likely have significant implications the industry, as energy will become more expensive and it will further drive consumer preferences (see further above). The Commonwealth package also incentivises increased technological change by providing significant funding for R&D and investment in cleaner practices.
• **Innovation Council:** In 2009, the Automotive Industry Innovation Council (AIIC) was convened. It considers industry innovation challenges like climate change, sustainability and industry competitiveness as well as issues such as regulatory reform, workforce capability, skills needs, access to new technologies and other priorities for industry.

• **Finance and Retail:** The main market for the industry is car dealers who sell cars direct to the public. Car dealers rely on the availability of finance. However, in 2008 the availability of finance for automotive was reduced in wake of GFC. In response, the Commonwealth announced the establishment of a Special Purpose Vehicle (SPV) with the support of leading Australian banks to provide liquidity to car dealer financiers who have encountered financing difficulties as a result of the global financial crisis.

• **Team Australia Automotive (TAA):** TAA is an Australian Government initiative that receives support from the Department of Innovation, Industry, Science and Research, Austrade, ICN, the Victorian Government, the Government of South Australia and the Australian Federation of Automotive Parts Manufacturers.

**Victorian Government Policy and Support**

The Victorian Government also continues to actively support the industry and maintains a dedicated business unit to promote and support the industry. Examples of supporting activities include:

• **Australian Automotive week:** celebrated March each year in conjunction with the Australian Formula One Grand Prix and the Melbourne International Motor Show.

• **The Victorian government’s Automotive Manufacturing Action Plan:** was launched in December 2008 and designed to help the automotive industry build on its assets and turn current challenges into new opportunities for growth.

• **Funding support for the major automotive primes in Victoria:** including $21 investment into the Geelong engine plant, support for Ford’s Automotive Research and Testing (ACART) facility, in conjunction with the University of Melbourne.

• **Funding support for other activities including co-funding the Automotive Australia 2020 Technology Roadmap.**

Other key governmental action over the period centres around supporting market access and development activities. For example, both Austrade and Business Victoria seek to support Australian exporters access new markets.

**Employment, Industry Skills and Productivity:** a separate scan of the skills horizon, given its importance to RMIT’s engagement with the industry.

Automotive industries draw on a broad range of skills in design, manufacturing, sales and distribution, repair and servicing of passenger and commercial vehicles, heavy machinery, outdoor power equipment, farm machinery, recreational boating, motorbikes and bicycles (MSA). Skill development is essential for the future growth of the industry, particularly given the increasing focus on higher-level technical skills and to mitigate the impact of the lower labour costs in Asia. The average age of manufacturing workers is increasing which creates skills shortage pressures into the future. The MSA notes that young people are not entering the profession in sufficient numbers and that there are marketing activities required to overcome the negative image associated with manufacturing (MSA).

General trends which give lie to a need for ongoing skills development (and research) centre around:

• **Technological change:** ‘keeping up’ with changing technology, particularly the increasingly complex nature of vehicles. This is an issue “both in the workshop and in the sales team” with the MSA noting both workplaces will need to be targeted for upskilling. Similarly, the ongoing drive for more sustainable products and practices will be closely linked to enhanced skills.

• **Sustainability:** FCAI finds that “the most significant challenge facing the industry is in responding to the growing demand for lower carbon emission vehicles”. This will require investment in research and development as well as large investments in design, engineering and facilities (FCAI) : [http://www.fcai.com.au/policy/industry-policy](http://www.fcai.com.au/policy/industry-policy)
• **Structural adjustment**: Aspects of the New Car Plan provide for structural adjustment assistance to support consolidation and to support unprofitable businesses and their employees transition out of the industry. Specifically, under the Automotive Industry Structural Adjustment Program (AISAP) workers have access to intensive employment and training assistance such as job search and career advice, a comprehensive skills assessment, skills development and training relevant to the needs of the local labour market. While such measures are likely to contribute to the overall decline in automotive industry employment, it does provide education and training opportunities for providers and opportunities to support the industry develop new capabilities beyond traditional automotive markets.

**Skills Shortages**

While employment may have been declining overall, particular occupations continue to experience skill shortage. The MSA identifies the following automotive occupations as being in shortage:

- Electric drive designers/engineers
- Electric drive technicians and tradespeople
- Battery designers and technicians
- High level maintenance technicians
- Draftspeople
- Managers and supervisors
- Trainers
- Competitive manufacturing specialists
- Production and assembly workers
- Materials handlers
- Fabricators and vehicle body makers
- Electronic systems (drive-by-wire)
- workers in services, repair, diagnostic and systems recalibration
- Data acquisition and analysis specialists (vehicle diagnostics)
- Parts interpreters
- Field diagnostics, services and repair specialists
- Heavy vehicle system rebuilders
- Panel beaters
- Vehicle painters
- Diesel fitters
- Motor mechanics
- Welders
- Tool repair technicians

The Commonwealth’s *Skills Shortages Victoria 2010* found Victorian shortages in Automotive Electrician, Diesel Motor Mechanic, Motorcycle Mechanic, Panelbeater and Vehicle Painter (Commonwealth, Skills Shortages Victoria). Survey results found that applicants for positions were unsuitable mainly due to lack of qualifications and experience, with inadequate communications skills and poor candidate attitude also factors, particularly for panel beaters and vehicle painters (MSA). It is also possible that skills shortages in related industries such as IT can affect shortages in automotive, as the dividing line between manufacturing, research, and IT becomes relatively blurred (e.g. increasing electronic componetry in new cars).

The Commonwealth Skilled Occupation List also lists occupations associated with automotive, including Automotive Electrician, Diesel Motor Mechanic and Motor Mechanic (general) as well as other trades-based occupations such as welders.

**Training Pathways and Packages**

The MSA has found that:

- 56 per cent of respondents are engaging in training on a needs only basis (particularly as the GFC caused industry to focus on survival strategies and due to a fear that workers could be ‘poached’ by the resource sector).
- apprentice and trainee commencements in both automotive training packages are down: since 2007, enrolments in Automotive Manufacturing are down 187 (from 322 to 135) and Automotive Industry Retail, Service and Repair is down 480 (from 8,525 to 8,025) (MSA).
The MSA notes that emerging technology areas are emerging as “skill development priorities” and must be considered in future developments of the automotive training package. Auto Skills Australia Ltd, a new, wholly owned subsidiary of MSA, will soon take on all responsibility for national industry training arrangements for the automotive industry, including the two industry Training Packages for Retail Service and Repair and Automotive Manufacturing.

**Global Engagement and Business Training**

In a changing global market, it is critical that Australian automotive players are able to recognise opportunities, trends and shifts in product mix, customer needs' and develop and implement market strategies as well as coordinate and manage projects to schedule cost and quality. For example, FAPM notes that it is “imperative” for the long term manufacturing future in Victoria that an Australian supplier is able to “make contacts and foster relationships with the three vehicle manufacturers at their main engineering and purchasing centres around the world, whether in Japan, China, Korea, the US or Europe” (FAPM).

This could point to education and training opportunities in business research and industry intelligence, international management and global engagement, language, general and cross-cultural communication skills, project management, finance, law project management and possibly logistics. Additionally, sales and financial skills form key parts of the industry.

Furthermore, MSA has found a) gaps in “business skills analysis, workforce planning and development capability” (15) and b) that only 45 per cent of respondents to their survey are operating from a formal, integrated business plan. This could point to further support opportunities for the industry.

**Other Skills and Training Trends/Issues**

- **Technology and design:** Increased competition, trends towards consolidation and a need to integrate with global supply chains creates need for a well-designed business operation, new and inventive products and an efficient manufacturing process. Design skills are particularly important to meet heightened customer expectations and changing customer preferences. More broadly, new products and a poor perceptions of manufacturing as a career create advertising opportunities.

**Government engagement and regulatory knowledge:** FAPM also notes the importance that businesses are able to work with governments to foster closer relationships. As Government regulations, vary significantly from one region to another, adding complexity to the mix of vehicles offered by OEMs (KPMG) it is also important that businesses are able to recognise the needs and requirements of differing markets.

- **Learner profile and recruitment:** Specific issues facing the industry for the learning and workforce profile include an ageing workforce and male-dominated workforce. There is a need for strong recruitment and training of a younger cohort to replace outgoing workers with opportunities to recruit more females into the workforce.
Appendix

Comparison of Yearly Sales Source: VFacts (from Auto factsheet)

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>Change</th>
<th>2009</th>
<th>Change</th>
<th>2010</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Vehicles</td>
<td>1,012,164</td>
<td>-3.7%</td>
<td>937,328</td>
<td>-7.4%</td>
<td>1,035,547</td>
<td>10.5%</td>
</tr>
<tr>
<td>PMVs</td>
<td>596,765</td>
<td>-6.4%</td>
<td>540,562</td>
<td>-9.4%</td>
<td>592,122</td>
<td>9.5%</td>
</tr>
<tr>
<td>Aust Made Vehicles</td>
<td>171,432</td>
<td>-14.5%</td>
<td>147,680</td>
<td>-13.9%</td>
<td>146,314</td>
<td>-0.7%</td>
</tr>
<tr>
<td>SUVs</td>
<td>194,458</td>
<td>-2.0%</td>
<td>188,153</td>
<td>-3.4%</td>
<td>235,285</td>
<td>25.0%</td>
</tr>
<tr>
<td>Light Trucks</td>
<td>185,016</td>
<td>4.2%</td>
<td>181,058</td>
<td>-2.1%</td>
<td>179,553</td>
<td>-0.8%</td>
</tr>
<tr>
<td>Heavy Trucks</td>
<td>35,925</td>
<td>-3.6%</td>
<td>27,555</td>
<td>-23.3%</td>
<td>28,614</td>
<td>3.8%</td>
</tr>
</tbody>
</table>

Australian Vehicle Production, Domestic Sales and Export Sales (Calendar Year) (from Auto factsheet)

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic sales</td>
<td>248,912</td>
<td>201,623</td>
<td>200,485</td>
<td>171,432</td>
<td>147,680</td>
<td>146,341</td>
</tr>
<tr>
<td>Export sales</td>
<td>142,022</td>
<td>132,742</td>
<td>140,233</td>
<td>161,956</td>
<td>72,915</td>
<td>94,095</td>
</tr>
<tr>
<td>Total sales</td>
<td>390,934</td>
<td>334,365</td>
<td>340,718</td>
<td>333,388</td>
<td>220,595</td>
<td>240,436</td>
</tr>
<tr>
<td>Total domestic production (1)</td>
<td>387,821</td>
<td>329,428</td>
<td>335,625</td>
<td>324,684</td>
<td>218,258</td>
<td>242,941</td>
</tr>
</tbody>
</table>

Source: VFACTS; KAS
Fig. 1 Value of Australian Automotive Exports, 2007 - 2011

Source: DFAT Stars database

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