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It's all about the money: adding value to industry through industrial design-led innovations

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There are a lot of studies describing the importance of university-industry engagement (Shane, 2004; Friedman and Silberman, 2003; Jensen et al., 2003; Link et al., 2003, D'Este and Patel, 2007), however very few describe the detailed working relationships required to satisfy both the university and the company involved. More importantly, there is limited work done showing the value of such engagement from a commercial point of view. This study provides an authoritative guide for understanding successful engagement with industry to help manufacturers diversify their output to increase profit margins and sustain production in often declining industries. This study plays particular focus to industrial design-led innovations for manufacturers directly associated with the demise of the Australian automotive sector. Research-led practice in industrial design shows the importance of new product options for these struggling automotive supply companies and the manner in which this is done successfully is discussed with evidence from recent activities completed for prominent Australian automotive suppliers. Following this, customer engagement through sales and marketing, the value issues, the value for customers and the value for companies engaging with universities is described to provide a clear method of engagement from initial meeting through to commercially viable outcome.

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It's all about the money: Adding value to industry through industrial design-led innovations

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Abstract

There are a lot of studies describing the importance of university-industry engagement (Shane, 2004; Friedman and Silberman, 2003; Jensen et al., 2003; Link et al., 2003, D'Este and Patel, 2007), however very few describe the detailed working relationships required to satisfy both the university and the company involved. More importantly, there is limited work done showing the value of such engagement from a commercial point of view. This study provides an authoritative guide for understanding successful engagement with industry to help manufacturers diversify their output to increase profit margins and sustain production in often declining industries.

This study plays particular focus to industrial design-led innovations for manufacturers directly associated with the demise of the Australian automotive sector. Research-led practice in industrial design shows the importance of new product options for these struggling automotive supply companies and the manner in which this is done successfully is discussed with evidence from recent activities completed for prominent Australian automotive suppliers. Following this, customer engagement through sales and marketing, the value issues, the value for customers and the value for companies engaging with universities is described to provide a clear method of engagement from initial meeting through to commercially viable outcome.

Industrial Design; Marketing; Manufacturing; Design-led innovations; Industry-university engagement

This paper aims to inform the reader about the intricacies that arise when working on industry engaged research projects and what is required to generate outcomes the paying

company is happy with. The focus is on new product developments for manufacturing companies associated with the automotive industry from product inception through to market penetration.

Over the past four years, the authors have completed a number of industry-linked research projects categorised under the Australian Research Council as Category 3 research income. A majority of this work is linked to helping diversify output for Australian manufacturing companies producing componentry to the automotive industry. The major issue now faced is a lack of diversification within this industry after the announcement of Ford (2016), General Motors (GM) Holden (2017) and Toyota (2017) moving their manufacturing offshore. Each of these motor vehicle producers have cited the high cost of manufacturing, a highly competitive and fragmented domestic market and changing consumer preferences as reasons for why they will no longer manufacture vehicles in Australia.

This creates a significant issue with an estimated 130 component, tooling, design and engineering companies who are registered for the Automotive Transformation Scheme auto-supply companies in Australia needing to find other avenues of production to sustain their companies (Australian Government Department of Industry and Science, 2015). This study shows how engagement with universities can help assist through the development of new products that fit within the existing capabilities of these manufacturing companies.

The companies that engage with universities for these types of activities are highly skilled manufacturers and often have expert engineers but a vast majority have no expertise in developing new commercially relevant products and taking them to market. That is not their skill set, as they have never had to do this before. This is where engagement with universities is particularly useful as the missing skills can be acquired and the core business of the manufacturing company is not jeopardised.

There are a lot of 'hidden' assets within these manufacturing companies and engagement with universities helps expose some of these. Hidden assets can include knowledge of employees, 'tricks-of-the-trade', brand loyalty, market position etc. and these assets increasingly play a major role for the survival of these companies.

“(Intellectual capital) is becoming corporate America's most valuable asset and can be its sharpest competitive weapon. The challenge is to find what you have – and use it” (Steward 1994 in Roos et. al. 1997).

This statement from Steward (1994), while dated, should be applied to Australian manufactures in the same manner to increase the competitive awareness of the company and use the skills and knowledge that exists. The mining boom is over and Australian's need to prioritise the knowledge of its people to help keep manufacturing jobs alive in an ever-

increasing competitive environment.

There is still some frustrating contention about the legitimacy of R&D activities within a university to be categorised as scholarly research. This type of activity can be seen as not ‘academic’ enough to warrant scholarly recognition, however it is the authors’ view that this type of research can be seen as more relevant to many peer-reviewed journal articles that may show the outcomes of certain studies, but do not directly contribute to the growth of Australian companies. Research completed within a university context that directly helps struggling companies should be seen as one of the highest priorities. The ultimate result of this type of research is to keep manufacturing strong in Australia, which will inadvertently keep jobs in Australia. By continually connecting universities with industry, research will be more relevant and the knowledge will filter down to students ensuring more appropriate pedagogies for learning.

Kuys et. al. (2014) argues that research-led practice in design research provides a platform for demonstrating the applicability of design theories in practice. Design practice is inspired and directed by research where concepts generated through industrial design practice provide evidence that research-led industrial design practice has the ability to generate a new body of knowledge. For this study it is the research into new product developments that can be manufactured in a cost competitive manner using machinery that already exists within the manufacturing company that generates the greatest interest. This study shows how this is done through current Category 3 research projects and highlights successful methods of engagement, as well as the difficulties that can be encountered between working across academia and industry.

It is noted in D’Este and Patel (2007) that only a minority of university–industry interactions are motivated by the prospect of directly realised commercial products. Also, Mansfield and Lee (1996) argue, academic R&D supported by industry seldom yields specific inventions or products. These statements while perhaps relevant during the time of publishing are the complete opposite this paper is trying to achieve. In an ever-increasing competitive manufacturing environment, it is the authors’ believe that research of this type should have a majority of R&D activities supported by industry yielding commercially viable outcomes, rather than the opposite. Obviously there is clearly a need for theoretical design research within academia so this particular argument relates directly to industrial design-led input for manufacturing companies looking to diversify. The authors’ argue that ‘heavy’ theory should not be seen as the only legitimate form of scholarly research. Applied (practice-based) research should also be highly regarded as this form of research often generates greater funding potential from industry partners.

Why is industry–university engagement important?

University research is increasingly funded by private companies, as the share of basic funding for universities is decreasing. Between 1993 and 2013 (20-year period) National Competitive Grant (Category 1) funding for Australian universities increased by 492 per cent – \$1,683,718,345 in 1993 compared to \$1,683,718,345 in 2013 (HERDC 1992–2013). To contrast this between the same period, the total industry and other funding (Category 3) funding for Australian universities grew by 685 per cent – \$117,469,571 in 1993 compared to \$922,315,551 in 2013 (HERDC 1992–2013). This data shows the importance of Category 3 income for universities, as while both categories are growing, it is the industry funding that is growing faster. This trend will continue as universities become increasingly under pressure to sustain research activity without relying too heavily on the government.

A lot of the literature on this topic is mainly empirical and show the benefits of university–industry relationships from a scientific point of view and not a design background. Many studies (Faulkner and Senker, 1995; Sequeira and Martin, 1997; Arundel and Geuna, 2004; Howell et al., 1998; Meyer-Krahmer and Schmock, 1998 and D’Este et al., 2005) explain how academic research outcomes have influenced many innovations, which could not have been realised or would have come much later (Mansfield, 1995; Beise and Stahl, 1999). It was also noted by Cohen et al., (2002), that scientific results brought about increased sales and higher research productivity and patenting activity for companies. All of this is vitally important and validates the need to better engage with industry on university research projects.

Barab & Squire (2004) explain, researchers who “engage in doing design work... directly impact practice while advancing theory that will be of use to others” (Barab & Squire, 2004, p. 8). This is followed by Friedman (2008) who describes one of the deep problems in design research is the failure to engage in grounded theory, developing theory out of practice. Instead, many designers confuse practice with research. Rather than developing theory from practice through articulation and inductive inquiry, some designers mistakenly argue that practice is research (Friedman 2008, p. 154). It is the grounded theory that is used to influence the design process in order to generate outcomes that directly benefit the company.

There is however concern that increased industry–university research collaborations will force universities into taking more applied research and development work (Geuna, 2001; Geuna and Nesta, 2003; Nelson, 2001), thus leading them to neglect their responsibilities for long-term knowledge development (Gulbrandsen and Smeby, 2005). It is the author’s belief that this type of work provides greater acceptance for design research, as no longer it stays within the walls of a university, and is used to practically benefit companies; hence creating knowledge in its own right. The examples used in this paper show the value research-led practice in industrial design can bring through tangible examples that fit within a ‘real-world’ context.

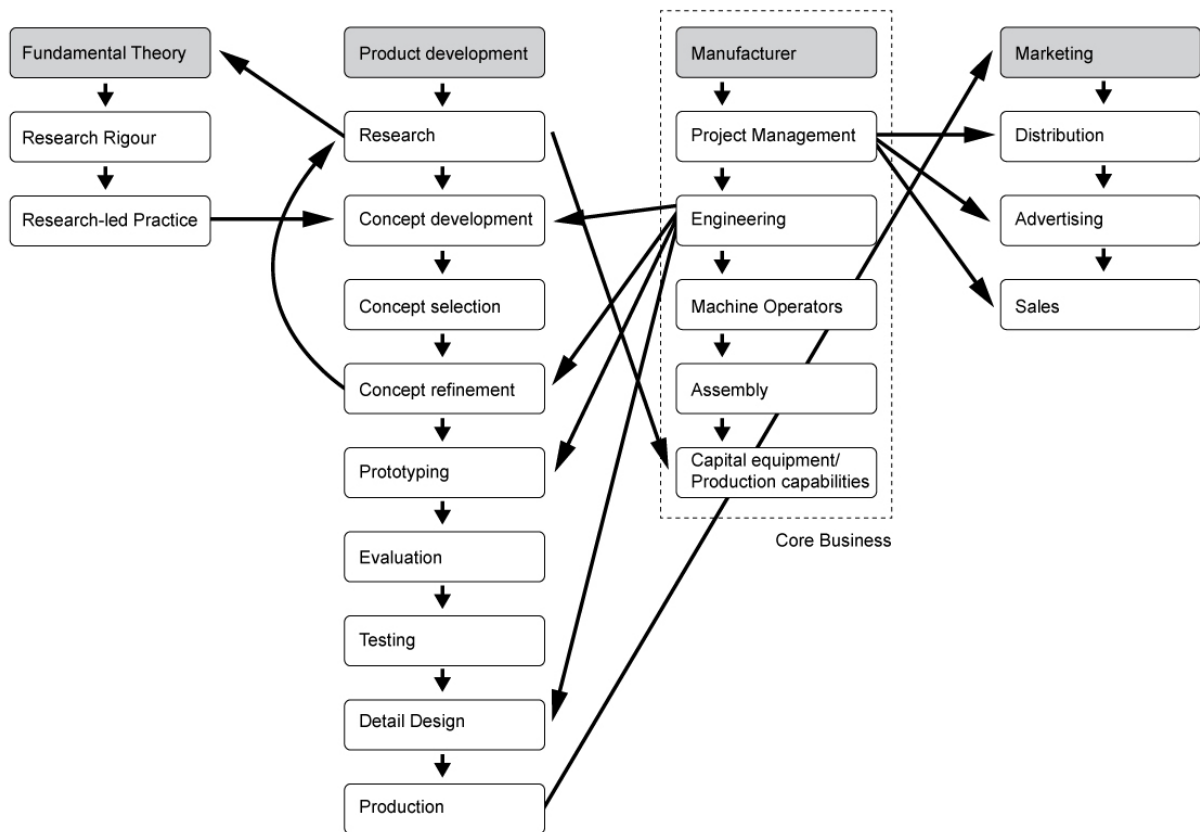


Figure 1: The complex process of engagement between a manufacturing company and a university for new product developments.

Figure 1 visually depicts the complex process of engagement for a manufacturing company to start developing their own products. The scenario mapped in this situation shows the core business of the manufacturer having the capabilities of producing specific products through project management, engineering expertise etc. The issue now faced by many manufacturers in Australia is they no longer produce things that people/companies want. For a manufacturer supplying componentry to the automotive industry in Australia, they have always understood what it is they need to produce – the quality is specified, the quantity is known and the capabilities are there. However, until recently the sector in which they are producing componentry are no longer there, and for the first time these manufacturing companies need to innovate upon their existing range. Innovation requires a different skill-set and often manufacturers don't know where to start. This is where engagement with a university could be extremely beneficial.

The core business for many Australian manufacturers does not include design or marketing, which in cases such as this are the missing pieces for the introduction of new products. All three key areas being design, manufacturing and marketing play a significant role in

developing commercial products. None are more significant than another; as if one were missing there is no point in the other two. All areas cross-lap to ensure the products being developed fit the capabilities of the manufacturing company with an intended market. It is the fundamental theory that initiates the design process with ongoing 'buy-in' from both the manufacturer and the marketing expertise. The process is not linear, as interactions throughout the entire design process are required to yield optimum results.

Kuys et al. (2014) highlights research-led industrial design practice in academia uses research to search for problems which supports the need to practice industrial design to develop innovative design solutions for either industry, university or government projects (p.4). Industries want value-added design solutions that can be commercialised, universities want research outcomes (peer-recognised journal articles, conferences and books) and government want both (p.16). The difference with practicing industrial design in industry is, it is commonly used to achieve market dominance — while under time and cost constraints — driven by company performance, profitability and branding (Gemser & Lennders, 2001, p.35; Kotler & Rath, 1984; Ulrich & Pearson, 1998, p.353).

This study is not claiming that research-led industrial design practice from academia is superior to industrial design practice in industry. There are many differences, mainly the research rigor that informs the design process and the in-depth body of research and knowledge required to justify the need to develop new products in the first place. It is arguing that design innovation generated through research-led industrial design practice in academia is a legitimate form of design research and should be respected for its knowledge creation in both a university context and an industry context. This is further emphasised in the following case study and is supported by recent work by Roos and Kennedy (2014), which provides evidence through similar case studies of company success in high-cost operating environments. In this book by Roos and Kennedy (2014), there is substantial evidence showing design-led innovation as an enabler for the success of Small to Medium Enterprises (SME's) within high-growth environments. In a chapter within this book by Bucolo and Wrigley (Chapter 9, 2014), they go on to say that businesses that may have been exposed to the concept of design previously at a product level are now seeking to better understand its value through implementation at a strategic level offering. The following case study explains how this was done in a recent project between a tier-one automotive supplier and a prominent design university in Melbourne, Australia.

Case Study – New product developments for an Australian automotive supplier

The project described in this case study is new product development that fit the existing capabilities of a prominent plastics manufacturer to the automotive industry. The authors of this paper have worked closely with Australian manufacturers who were looking at diversifying their product offerings by using the existing capital within their organisation. In this period, four SMEs have signed agreements with the university, which have generated over \$300,000 in Category 3 research income.

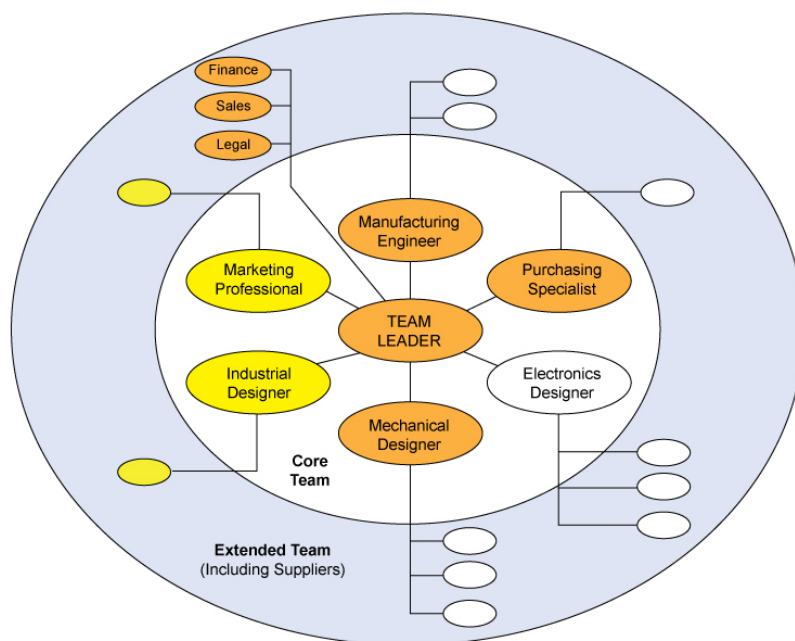


Figure 2: The general composition of a product development team showing the core business of a manufacturer in orange and the university involvement in yellow (derived from Ulrich and Eppinger, 2004).

Figure 2 is derived from Ulrich and Eppinger (2004) and shows the general composition of a product development team for an electromechanical product of modest complexity. This is widely used to show the different parties (disciplines) required to successfully develop a product. The main issue with the manufacturing companies engaged with to date is that they don't have design or marketing teams as part of their company. The areas highlighted in orange in Figure 2 show the core business of the manufacturing company and the obvious need to find the missing skills. The highlighted areas in yellow clarify where the university has contributed to the project. By engaging with a university other areas of expertise can be sort to successfully develop profitable outcomes. Without all areas working together profitable outcomes would be much harder to achieve. While it is difficult to gain expertise from all areas, the more disciplines that can come together the better chances of a products success. For this study we discuss how design and marketing expertise have come from a university context to directly assist an Australian manufacturer in a struggling market.



Figure 3: A shopping trolley handle designed to be retrofit on existing trolleys that supports a smart phone.

The project example shown in Figure 3 provides context for what a typical outcome looks like for this level of engagement. The fundamental issue the company had was generating new product ideas and understanding the market viability of these. For this particular project five new product options were delivered, which all fit within the existing capabilities of the company to ensure no extra production equipment was required. Figure 3 is an example of one of these ideas, which is a new handle design for shopping trolleys. For this project the shopping trolley itself has not changed. It is the handle that has been redesigned to provide an innovative product option to what currently exists.

To summarise the process of engagement, new product ‘areas’ were identified and presented to the manufacturing company. For this particular example the product area were for supermarkets. Other areas included the construction industry and the DIY hardware industry, which are all growing markets. Initial concepts were presented and the most preferred ideas were selected by the company and refined. The involvement of the company in all stages of the design process was vital to ensure the developed products were plausible and were able to fit the capabilities of the manufacturer.

For this case study example, a review of existing products was done to ensure the final product was an innovation upon what already exists. Figure 4 shows an existing product

used in Australian supermarkets that is similar to what has been developed, however, it was considered by both the industrial design team and the manufacturer to lack appropriate innovation, as the inclusion of a cup holder for when you are grocery shopping was deemed unnecessary. The handle is also very bulky and makes the trolley 'feel' heavy when used.



Figure 4: Example of an existing product used as a benchmark in the design process.

These perceived negative attributes for the existing trolley handle were reviewed and the resulting outcome was a trolley handle that could support a smart phone, rather than a cup. It is believed that this would benefit both the user and the supermarket for the following reasons:

- The user will be able to use their smart phone 'hands-free' for shopping lists or for using supermarket apps. These apps are quite sophisticated but are not used due to customers not wanting to hold their smart phone and push the trolley at the same time. The supermarkets will also benefit from this, as a lot of money would have been invested in developing these apps that not many customers use.
- The smart phone can be rotated 180 degrees to be visible for the child restrained in the child seat. This has the potential to occupy the child, which would make grocery shopping somewhat easier for the parent. The supermarket would obviously like this feature, as it will keep parents in the supermarket longer, which may result in more products being purchased.

For this particular product concept presented to support this case study, there were a lot of refinement iterations to help resolve many issues that arose. The two greatest design challenges were the ability to support different size smart phones and the ability to provide a secure support to prevent smart phone theft while shopping. To answer the first issue a fully engineered 'movable' part was designed to accommodate various size phones – from small

iPhone 4's to large Samsung Galaxy Note's. This was achieved by designing a threaded shaft that once turned clamps the phone into position.

There were great concerns that this product would leave a smart phone vulnerable to theft if it were not appropriately supported into the trolley handle. Initial thoughts were to replace the coin-release system with a 'phone-release' system but this would have created issues if the customer wanted to use their phone during shopping, which would not have been possible if it was locked in the trolley handle. To counteract this, a slow-turn screw thread was incorporated into the design, which enables all users to securely 'lock' their smart phone into position without worrying about someone stealing it. If the user receives a phone call or needs to use their phone, they simply unscrew the support and retrieve their phone. The act of unscrewing creates a deterrent for theft and sound indications would be present when unscrewing as a further deterrent.

All of this work was then presented to the manufacturing company along with rapid prototype models and presentation visuals as previously seen in Figure 3. This suddenly provided new product options that the manufacturing company was capable of producing, were innovations upon current products, and more importantly identified a market gap.

Key learnings for successful engagement

Over the past four years of working on industry-linked projects the authors' have built a knowledge bank of key points for others to learn from when engaging with industry on product development projects. These points aim to assist others in understanding the intricacies involved so further engagement of this type can continue. The main points observed are as follows:

- Companies wanting everything (design outcome) instantly for minimal investment – Government support is required in the form of Innovation Vouchers or the Australian Government Research Connections program.
- Companies can't see what the return on investment is. This makes the first meeting crucial, as the university team must show examples of previous projects to show capabilities and return on investment. Evidence of successful projects help convince the company to spend money with the university.
- Building contingencies into projects. Project proposals should be broken into stages. The first stage is when the university team prove themselves to build the relationship and ensure the company paying the money is confident you will deliver. If the first stage is not done to satisfaction of the client they have the right to terminate the project. This limits the risk of the company and increases the chances of engagement. Obviously this prompts the university team to work very hard in the first stage to ensure both parties are happy and the project continues.
- Importance of research – fundamental research and market identification is required to ensure there is a market gap. The university research team needs the necessary skills to deliver so teams need to be identified early. The projects conducted by the authors include project teams with the following personnel:

- Research (Post-doctoral research fellow)
- Industrial Designers – Concept generation, CAD, user-centred design, material selection.
- Product Design Engineers – Refinement/manufacturing details
- Marketing/business personal
- Project manager – timelines, main point of contact for client, accountability, quality control, innovation – new ideas

All of the above need to work closely with each other to ensure project outcomes are coherent. It is also good to have different opinions on each particular stage rather than work in isolation so regular team meetings are essential.

- Fortnightly updates to the client – This ensures companies understand the design process and minimises the concern that the project is delayed. The paying company appreciates ongoing contact and fortnightly updates force the university team to stay on schedule.
- Companies need to realise that academic staff have many other commitments and don't spend 100 per cent of their time working on these projects. Teaching, management, service, engagement, research (publications etc.) are all done at the same time as these industry-linked projects. This highlights the importance of having a strong team working together. All members of the design team in this instance are ex-students of the Chief Investigator who have started their own companies. They are highly skilled in their discipline and have the flexibility to contribute to the project, while obviously appreciating the security of a consistent income throughout the duration of the project.
- Companies pay a much lower fee than if they were going to a design consultancy. They pay for the 'slowness' of a university due to the above reasons; however, the projects have a much deeper consideration to research that ultimately influences the project outcomes. Engaging with a university also provides security by the brand and the supporting infrastructure and provides access to university facilities. For a large majority of projects completed by the authors a world-class SLA rapid prototyping facility has been used extensively, which is property of the university. This helps significantly for quick, tangible design iterations, which were particularly important for products that required extensive ergonomic resolution.
- Constant collaboration with the paying company throughout the entire process – Using the company's skills to improve design outcomes and ensure they fit within the company's capabilities. This makes the company feel significantly involved in the products and gives a sense of ownership. This assists products to move from a conceptual stage to commercialisation, as they want to see 'their' own ideas come to fruition.
- Companies want outcomes instantly as they don't understand the design process. This forces project proposals to clearly state what the outcomes/deliverables are and when they will be completed.
- Project planning using Gantt Charts are important for both the university design team and the company.
- Project proposals are created against the design process, which is broadly broken down in three major categories:
 - Research
 - Ideation, concept generation
 - Development and prototyping
- For larger projects the following stages are included:
 - Engineering refinement
 - Manufacturing documentation

- Commercialisation

Market penetration

Due to Australian manufacturing companies needing new product ideas more so than engineering expertise, a lot of projects end at the prototyping stage with the aim for these companies to engineer the outcomes themselves. It would be much more beneficial if these projects followed the entire process from initial research through to full commercialisation, however companies that engage with this activity don't have the necessary funds to invest and usually do this in-house with limited success.

As mentioned, the major issue these manufacturing companies have is generating new ideas, as they don't have any designers employed and haven't had to do this before. Once the idea is created with input from those 'on-the-ground' within the organisation, the company feels confident in using their own people to produce them. However, the other major thing that is lacking within these organisations is entering markets. They don't know how to enter markets, which is critical to the success of these products. If the company can't sell any of the products that are being developed then there is no point to the entire activity.

A marketers perspective of the innovation process

The innovation literature is dominated by case studies and many surveys of medium to large companies, where the biggest issue that many of these companies face is the integration of their functional specialists — specifically marketing and sales — with their technically trained counterparts such as engineering, manufacturing, R&D on new product development projects (Griffin and Hauser, 1996; Leenders and Weirenga, 2002 and 2008). The explicit assumption being that the company has an abundance of highly trained and experienced professionals available to them which can use the profuse best practice models to develop new products effectively together (Barczak et al, 2009).

Unfortunately, the sophistication in manufacturing innovation necessary to be world-class is lacking in the Australian context. In recent work Terziovski (2010) examines the innovation capabilities of small to medium Australian manufacturers from an innovation capabilities perspective and finds that they fail to utilise innovation culture in a strategic and structured manner – and should rather adopt the strategic and market-driven perspective of larger manufacturers.

More alarmingly to the authors is that there seems to be a genuine lack of market sensing capabilities and an understanding of the fundamental market orientation philosophy, which has driven many successful companies for two decades (Jaworski and Kohli 1993; Narver and Slater, 1994; Day 1994). This lack of understanding of the true capabilities of a professional marketing function/unit is apparent when examining some of the key

recommendations of the recent 2014 Design for Future Manufacturing Competitiveness report, co-authored by Prof Sam Bucolo, UTS Design and Innovation Research Centre and Peter King of CSIRO. Specifically, they identified five key principles exhibited by the 14 successful innovating manufacturers used as case study examples:

- Clarity of Purpose: Organisations need a clear purpose, communicated openly internally and externally.
- Become Your Market: Organisations need to immerse themselves in the world of their customers, customers' customers, and stakeholders to identify opportunities for market disruption.
- Be the Disruptor: Organisations need business models that consider markets and services, not just products.
- Integrated Business Model: Organisations need to innovate by integrating along the value chain.
- Own the Change Experience: Organisations need to be dynamic, agile and flexible and to embrace change.

Of the five key principles, the two that are the heart of the marketing discipline, are *Become your market*, and, *Be the Disruptor* where markets and services are at its core, capturing the *Voice of the Customer* (Griffin and Hauser, 1993) is what marketers do as a *raison d'être*. In particular, understanding the connection of these two principles to a customer's value proposition is the most important concept in marketing and is critical to long-term success of any organisation. Bucolo and King (2014) clearly articulate the importance of value to manufacturing:

“High value manufacturing focuses on the company managing its *intangible assets of brand and image, research and development, intellectual property, market intelligence, product/service packages, marketing and logistics, customer relations management*, and its human and organisational capital. To remain competitive, many Australian companies need to transition from their traditional business models to those centred on high value-added product and service ‘solutions’ that compete on value rather than cost alone.” (Bucolo and King, 2014).

What we contend is that what seems to be a revelation to manufacturers, that drawing from the above quote, *managing the intangible assets of brand and image, market intelligence, product/service packages, marketing and logistics, and customer relations management*, is mainstream marketing theory and practice which we teach in both undergraduate and postgraduate courses. The marketing function of a modern company has advanced well beyond being the ‘*advertising guys*’ who make pretty brochures for the company to modern professionals who are exposed to world-class benchmark processes and models in their tertiary studies and in their companies.

The dilemma for small to medium manufacturers is that they do not appreciate the breadth of

market sensing capabilities available to them through both the marketing and design disciplines, and when they do, the cost of an in-house marketing or a design professional is prohibitive. One approach which we recommend is to bring in the *voice of the customer*, through the use of final year marketing students who undertake specialist new product development subjects and can use manufacturing companies as their practical component of a subject. For example, in one Australian university, 3rd year students enrol in *Creating and Marketing New Products*, which is designed to teach students how to manage the complete new product development process of a company from new product strategy to commercial launch and management. At the core of this subject is an assignment where student groups (teaching teamwork) come up with a new product or service idea, develop the concept and with new 3D printing technology available on campus potentially develop an actual prototype, test the market appeal with a small group of potential customers and then *pitch* it to a board of directors (their class mates) – similar to the popular TV shows *Dragons Den* and *Shark Tank* based on their customer and market analysis but with a clear branding and marketing plan already developed as part of the process, not as an afterthought. The unique element of this assignment is that all students receive full marks at the start and only lose marks for unprofessional or sloppy work; this results in very professional and comprehensive Powerpoint presentations of 60 to 70 slides where three pages of references are not uncommon. This learning and teaching example links back to a section in the introduction of this paper showing that lessons learnt through industry engagement filter back to student learning, helping ensure that content being delivered is relevant and students are trained to better understand ‘what needs to be done’ to help Australian manufacturers.

Summary

The intention of this paper is to explain the benefits from an industrial design and marketing perspective and provides a case study highlighting the process of engagement. It is argued that research-led practice in industrial design generates more interest in engagement activities between industry and universities. There is still reservation from many companies to engage in university-industry projects because these companies want practical commercial outcomes and many don’t think they will get that from a university. There is a misguided belief that ‘all’ research output from a university is ‘heavy’ theory that does not result in profitable engagement. This can be the case, but the general research field in design and modern marketing is changing to ensure practical research outcomes can be achieved and theoretical research should not be seen as the only legitimate form of research. There is always a need for theoretical research in design and marketing, but the university research landscape should respect what both parties (practical and theoretical) can bring.

What seems to be clear is that Australian manufacturers could benefit from having exposure to the latest forms of innovation best practice drawing from both design and marketing disciplines through the use of students and their lecturers, and ensuring that design and marketing are included in the fuzzy front end of innovation with a mind to value delivery

and that ultimately means.... sales! The role of a modern designer and marketer is to ensure that products and services deliver so much value that they sell themselves. Our focus is on customer value delivery, customer satisfaction and customer relationship management, not because it sounds good but because it delivers revenue through sales and provides a competitive buffer with an overall aim to keep manufacturing jobs in Australia.

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