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Business models and design strategy

Exploring small scale furniture manufacturing

- David Rees and Marie Wilson

BING DAWE,
Never Much Loved (Black Shag at the Ox-Bow)

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By David Rees and Marie Wilson

With globalization, manufacturers throughout the OECD must compete with an increasing number of imports that present price and quality differentials. These forces have been keenly felt in New Zealand, which is far from export markets, highly de-regulated, and an import target for Asian production. Businesses in New Zealand and elsewhere are increasingly relying on design for competitive advantage in this context. Reflecting these new realities, the Design Management Institute notes:

> ...design management will have ever increasing importance in four fundamental ways. First, as businesses of all kinds deepen their understanding of the role of design in innovation they will look to design management as a powerful resource for innovation that will effectively differentiate their businesses and build sustainable competitive advantages; secondly, as people continue to find increasing choices in the marketplace and become more determined to improve the quality of their lives, they will demand more of what only the effective management of design can provide - good design; thirdly, the shift in attitude from design management to managing for design will unleash design's potential; and fourth, the increasingly important role design will play in building a bridge between the fundamental economic and cultural aspects of individual nations and the world will open the door for design to make an important contribution to healthy, balanced societies worldwide.[1]

The new realities are seldom recognised by smaller businesses.[2] For example, the lack of design management in smaller manufacturing firms has been linked to small firm managers being "..[un]able to discern relationships between current decisions (or short-term objectives) and long-term wider business goals".[3] The small firm's approach to business is often based on a single factor,

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such as a single product or a single area of expertise, which is generally production-based. This single-minded approach - with limited innovation in product, service or organization - is unlikely to deliver growth or sustainability in a globally competitive market.

Designing for competitive advantage

The interest in design as a tool for economic growth is best summed up in the opening paragraphs of the New Zealand Design Taskforce Report, Success by Design (2003):[4]

"Much of New Zealand's design is world class. In highly competitive world markets, Kiwi design has given our products an invaluable edge....However, design is under-used by New Zealand businesses....For New Zealand, and its businesses, to be operating at the top of their economic potential, we must strengthen links between our highly competent designers and our innovative businesses."

However, for this to occur design must base its contribution on a good understanding of the model within which the business is operating. It is important that designers take part in the interplay between producer and customer rather than relying on some independent "design insight". It is "interactive product innovation"[5] that is essential for manufacturers that wish to develop competitiveness through specialisation and quality rather than cost. This approach gives a great deal of flexibility, allowing relatively fast product (or other) innovation, tightly coupled to production stages and capabilities. Depending on external designers is highly risky and very slow, dependent on "hitting the mark" with a great design based on the expertise of the designer. However as Lorenzen[6] points out; "Because [such] product designs cannot be incrementally changed in an interplay with suppliers and customers, even well-established producers of designer furniture have missed the mark and gone bust".

If design is to add value to the business, it must be a part of the business, able to take part in that crucial interplay. This is made difficult however, by the differing mindsets of designers and business owner-managers. Managers may have clear ideas of what would sell and whether or not it would sell profitably. Designers have clear ideas of "good design" for product, or marketing. Both believe they know what to do to make the business successful; that is, both have mental models of "effectiveness" that are tacit and often competing versions of the business process. However, if progress is to be made in the integration of these two perspectives both need to understand what design in a business context is, and how it links to overall business effectiveness. As Buchanan[7] notes "...the popular understanding of design is not the understanding held by many leading designers". Further, many designers have limited understanding of business requirements. As one CEO in the study put it, "After lots of time and dollars the designer came up with a wonderful looking product that I could not produce in my factory". Both designers and CEOs may over-emphasize design of the product, rather than design of the business, and without adequate consultation may reach solutions that satisfy neither design nor business requirements.

If design is to add value to the business, it must be a part of the business

Most small New Zealand manufacturers are family owned and have grown on the basis of production skills

Misalignment between designers and managers is compounded by the limited view of their business held by many managers and owners. As pointed out by Bianchi and Bivona,[8] many small business owners have a "... low entrepreneurial awareness of their business system structure...[this]...often leads small business entrepreneurs to take their decisions according to a bounded point of view, both in terms of time horizon and causal relationships between internal and external relevant variables". That is, many owner-managers don't routinely think about how all the pieces of their business interact, and where the key points of leverage might be. Most small New Zealand manufacturers are family owned and have grown on the basis of production skills. They have very limited knowledge or capability in terms of other functions such as marketing and design. Knowledge of how these fit together into a coherent business model is often very limited. The challenge then is not just to educate designers about business and business owners about design but to develop an explicit business model which can succeed. This project pursues the understanding of design and the integration of design into business strategy at seven small manufacturers in a niche furniture production. We have focused on the furniture industry as a distributed network of small manufacturers with both domestic and international reach, that contribute to New Zealand's ambition to add value to commodity production and products. The furniture industry elevates the economic value of the New Zealand timber industry.

THE RESEARCH PROCESS

We have explored the design strategy issues in furniture manufacturing, relying primarily on case studies, supplemented with surveys of the industry, complemented by larger-scale national surveys across industries. We began with initial investigation with senior managers to investigate their firm and its business activities, and probing for their understanding and use of design. We broadly defined design and design management[9] to allow the manager's natural conceptions of business operations, and causal connections to emerge. The seven sample cases in the first phase were selected from the

New Zealand furniture manufacturing industry to control for institutional and regional variance. Each case organization was selected to fit with the following criteria: furniture manufacturing as the primary business activity; not currently in receivership, have fewer than 100 employees, and an identifiable founder or manager in the company (as a key informant). Subsequent survey research included furniture and other manufacturing companies throughout New Zealand.

Data gathering for the initial case studies took place during 2004 and 2005, with follow-up and surveying in 2006 and 2007. Structured interviews lasting approximately 1 to 1.5 hours were conducted with the managing director, one or more of the top management team (TMT), and one or more members of the senior and junior staff. The intention was to interview all members of the firm involved with the production, new product development, design and innovation. The data sought through the interviews related to company history, strategic orientations, formal and informal design practices, and rationales behind strategic decisions around the design, innovation and production.

In addition to the structured interviews, observation, participant observation, written documents (such as annual reports, confidential business reports, and formal documentation and private memos and reports) were collected. In addition, archival evidence and triangulation of data with case study evidence was used to explicate strategic and operational aspects of the design process. In the subsequent survey phase we used data collected in the annual "Clever Companies" survey,[10] to link types of business model, types of design and financial performance.

Capturing the business model

To track the impact of design on the business, a method is required that can enable explicit descriptions of business models to be made in consistent ways. To achieve this we chose two mapping methods, both of which were used with the case companies to assist their thinking and planning. The first is the method used by Weill & Vitale to explore the business models involved in shifting to e-business formats.[11] Weill and Vitale[12] is simple and accessible to business owners, and describes the three key flows of products, information and money occurring within the business. The second method is system dynamics modelling which has the advantage of providing an operational description that is more detailed than Weill and Vitale's key concepts. In System Dynamics applied to business strategy, models are used to map the relationships between the key resources and capabilities needed to deliver value for the business. In this view the business model provides a map of the "...economic system of resources that generates revenues, costs, and an ensuing pattern of cash flows over time".[13] Thus any model must show how revenue and costs play out over time and what the resources are required to generate them. Together, these different mapping methods provide a high-level overview, and a detailed operational description that are consistent across all three business models.

> Models are used to map the relationships between the key resources and capabilities

SUCCESS BY DESIGN?

The results are presented across the cases, followed by further elaboration of the design thinking and design opportunities presented in the case study companies. We are not presenting identifiable aspects of the case companies, to preserve commercially sensitive information, but we present key characteristics in summary format.

Business models of the small furniture manufacturer

Within the New Zealand furniture industry three distinct business models can be identified through review of industry documents and case studies. The first model is to sell direct to the customer (three case companies). At one extreme this is done through roadside businesses that target the local tourist trade. At the other are niche manufacturers of well designed and manufactured product that choose to set up their own retail outlet. These are small, usually limited to one retail outlet targeting customers interested in contemporary design. They are therefore small fragile businesses that are difficult to grow.

> Within the New Zealand furniture industry three distinct business models can be identified

The second and most common model has been to focus on supplying the large retailers (three case companies). This has led to a situation which is common in Europe as well. That is, companies supplying the large chains are forced to keep prices as low as possible resulting in them having to minimise wages which results in lowering of skill and over time of quality and flexibility. "Suppliers to such chains are low cost producers...that follow a strategy of cutting labour costs. For many such producers, however, such a trajectory may lead to de-skilling and, in the long run, loss of competitiveness".[14] In New Zealand many manufacturers who have maintained quality and competitiveness have done so by retaining loyal, long-serving staff who share the fortunes of the business in longer hours and relatively low wages. In one manufacturer the average age of production staff is over 60. The long term prospects for this operational strategy are, obviously, limited.

A third model focuses on markets that are not so price sensitive. In New Zealand this is the market of architects

and specifiers (two case companies). To succeed here, however, companies need both quality and flexibility to provide the range of products required and be able to change them to meet specific requirements. This situation requires co-operation and interaction within and between manufacturers to ensure the flexibility required.

> ...co-operative relations between specialised firms may be utilised as a strategy to achieve this kind of product flexibility. Specialisation subcontracting, that is co-operative arrangements between strongly specialised firms that depend on each other, provides producers of final goods great product flexibility as new product lines and a huge amount of add-ons are made possible...[15]

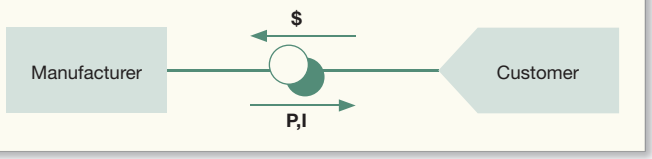
While cooperative strategies are common for this market internationally, none of the case study companies reported cooperative ventures. This limits the development of cooperative capability. This may be problematic when the industry makes a strategic decision to use design as a key element in responding to the challenges it faces.

Capturing the business model and linking it to design

While these models can be encapsulated as above, we needed greater detail to see the potential for design in each of the case study companies. In each case, we worked down through the levels of the company to capture first the basic model, then the systems model, and finally the contribution of design.

Direct to customer. The simplest business model within the New Zealand furniture industry is the 'direct-to-customer' model and is shown below using the Weill and Vitale mapping method (Figure 1) with an exchange of product for money direct between the customer and the manufacturer.

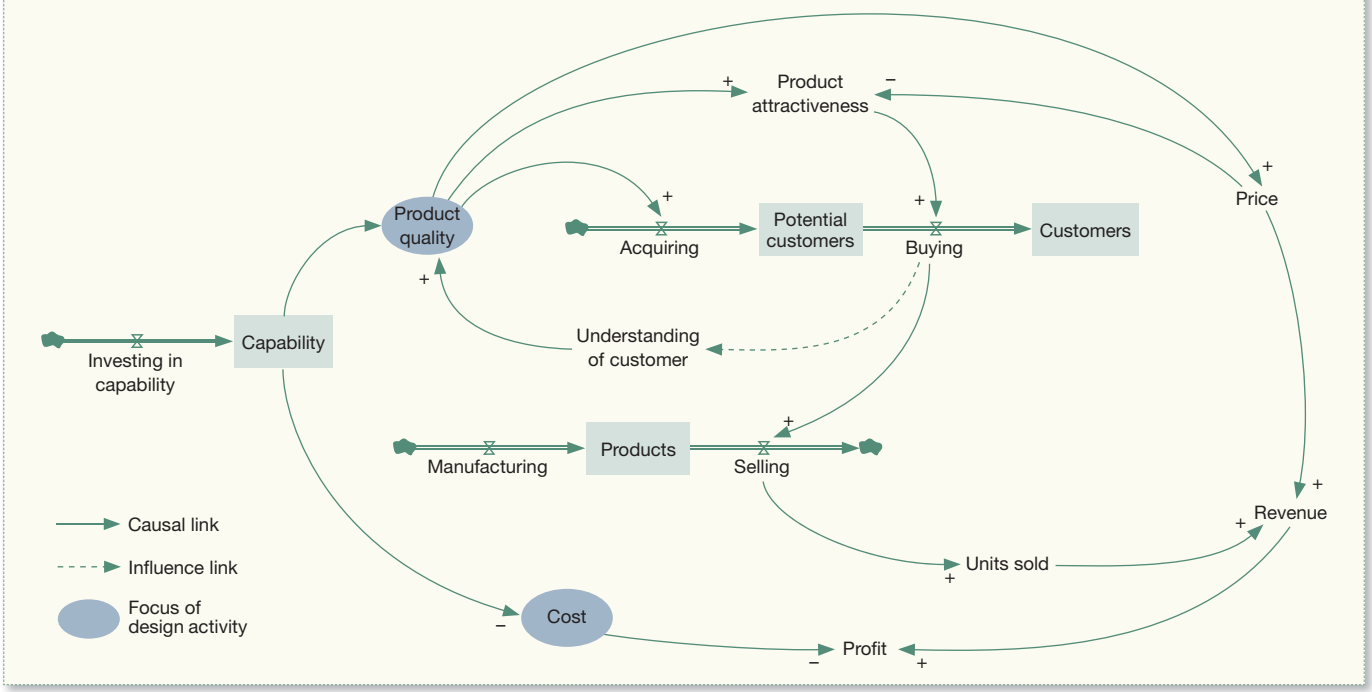
Figure 1 - Direct to Customer



In this model the firm sells direct to the customer. They provide the product and/or service (P) as well as the information about what is being offered (I). The customer pays the firm directly for those products ($). The circle over the line connecting the provider with the customer indicates that this is the dominant relationship. Whilst this schematic is a good starting point to describe the key players and their relationships it does not show how the business model operates and the resources and capabilities needed to make it succeed. Furthermore, while it does specify the key flows of information, product and money it does not show how these contribute to the development and maintenance of the key resources. To do this we turn to the system dynamics methodology.

Below is a system dynamics representation of the "direct-to-customer" model (Figure 2). What this technique does is to tease out the key relationships shown in the Weill and Vitale representation, and highlight more clearly where the three key flows of product, money and information are while also identifying the key resources and capabilities needed to make it work. For example, as

Figure 2 - System Dynamics Representation of the Direct-to-Customer Model



we see in the model, product quality is a function of the capability of the business to produce it, and understanding the customer. Product quality and product attractiveness convert potential customers to actual customers who buy the product. The price which customers will pay is a function of product quality and attractiveness to the customer and drives revenue for the business. The focus of design activity is shown in the circled areas, with causal links (solid arrows) and key influencers (dotted arrows).

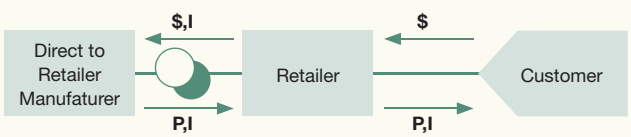
Within the direct-to-customer business model, the manufacturer has considerable control over his/her key strategic resources. They choose the site and nature of the transaction with the customer; have complete control over what is manufactured and how it is manufactured. Because of the direct nature of the transaction the manufacturer has the ability to ascertain a great deal about his/her customer which can then be incorporated into product quality directly affecting the attributes of product attractiveness. Direct face-to-face contact with customers provides opportunity to refine designs and tap into customer generated design ideas. The designer within the business has unrestricted opportunity to maximise specialisation and cost and quality of the product based on manufacturing capability and knowledge of targeted customers. The design input into "product quality" in this model can have a significant influence over the acquisition of "potential customers", "product attractiveness", and "price". It is a very intimate model in which the key resources are the products, customers and potential customers. One of the major problems for this business model is the stock of "potential customers" - without internationalization, the opportunities for growth based purely on a localised market is quite limited, through the firm may add additional outlets or pursue additional related markets. With the change in domestic markets to larger "one stop shop" retailers, the small direct manufacturer in New Zealand retail faces an increasingly challenging competitive environment.

Portraying the business model as a dynamic system not only highlights the key variables and the connections that are needed to deliver the appropriate flow of revenue and costs over time but also highlights where design can have an impact. Design in this model must, to be successful, engage in the interplay between the manufacturer and the customer and thus contribute to increased understanding of the customer as it is this understanding, along with the current product range and ongoing manufacturing capability that drives product quality. Engaging designer and/or designers in a manner that does not take advantage of this dialogue is highly risky and does not take account of the particular dynamics of this business model.

Direct to retailer. In this model, shown in figure 3, the primary relationship is that between the manufacturer and retailer and contact between the manufacturer and customer is essentially non-existent.

The manufacturer is almost totally dependent upon the retailer for information about the customer and

Figure 3 - Direct to Retailer



the customer is dependent for information about the manufacturers' product upon the retailer. As such, managing the relationship with their key retailers is crucial for furniture companies operating this model. A slightly fuller representation of this acknowledges that each provider will manufacture for more than one retailer. However, in the New Zealand furniture market 80% or more of all transactions are placed through one or two major retail chains.

The key differences in this model are that the links with the customer are now with the retailer. The manufacturer, whilst gaining larger distribution networks, loses contact with the customer and control over pricing and design. This model is one in which the manufacturer is placing all his faith in the ability of the retailer to attract customers and to continuing buying his product. The more detailed dynamics of this model are shown in the system dynamics representation (Figure 4).

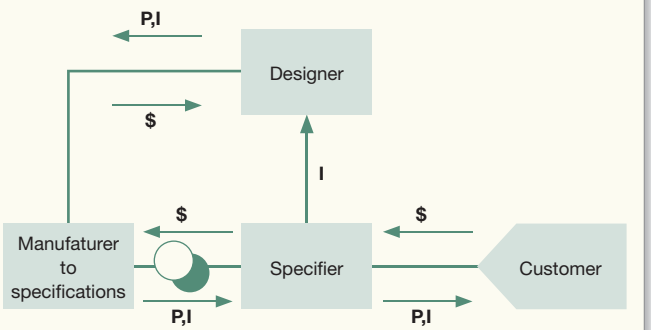
Product attractiveness in the direct-to-retailer model is impacted by the nature of the retailer; the customer choosing firstly which retailer to go to and only then deciding which product to buy. Retailer attractiveness is often the first choice factor. Furthermore, product quality is now heavily constrained by retailer requirements, has little if any impact upon price and is not a major factor in bringing on new retailers. This is the most common model within the New Zealand furniture industry and offers little scope for design. A visit to any of the major retailers will show an extensive floor display of largely homogeneous product. Large retailers are not at the cutting edge of design and, because of their need to ship large volumes; only put on the floor what they are confident will sell. Design is largely determined by retailer preferences, relying on small incremental changes from last year's product. Manufacturers often have to provide each major retailer with their 'unique' line which in truth is very similar to the 'unique' line offered to other retailers. As a result, product design converges and it is very difficult for any manufacturer to stand out; each manufacturer's product looks much like another's. Build quality, follow up service and price are the key determinants of consumer choice in this mass market and relationships with the retail buyer the key determinant of orders to place product on the retail floor. The manufacturer's contact with customers is limited to point-of-sale material. Customer relationships, including service follow-up (and opportunities for feedback), are handled by the retailer.

Design does have a role to play in the "quality of relationship with retailer", through both relationship

management and the design of effective display and point-of-sale material. This may be restricted if retail stores do not allow manufacturers to promote their own brands. Again, the promotion of manufacturer is controlled by the retailer. This is a risky business model as all the power lies with the retail chain. As Porter[16] points out, industry structure is a major factor in determining profitability: "The power of buyers determines the extent to which they retain most of the value created for themselves, leaving firms in an industry only modest returns" (Porter, 1985: 9). Put simply, furniture manufacturers are at the mercy of large retailers and their room to move is limited. In addition, the competition between manufacturers for their slice of the market means that they, "...compete away the value they create for buyers among themselves, passing it on in lower prices..." (Case company CEO).

The stock of potential customers is also a problem for this business model. In this case however, the issue is not necessarily that there are not enough but that there is not enough information. Relying on the retailer for customer information means that the manufacturer loses touch with their customer base, not knowing how big the potential market is or, more importantly, what their real preferences are. Relying on what sells does not, given the largely homogeneous product mix on the retail floors, say much about what people would really like were it available. Aware of these dynamics, one company has increasingly moved their business away from the retail market into the commercial market, utilising a model we refer to as "manufacturer of specified product".

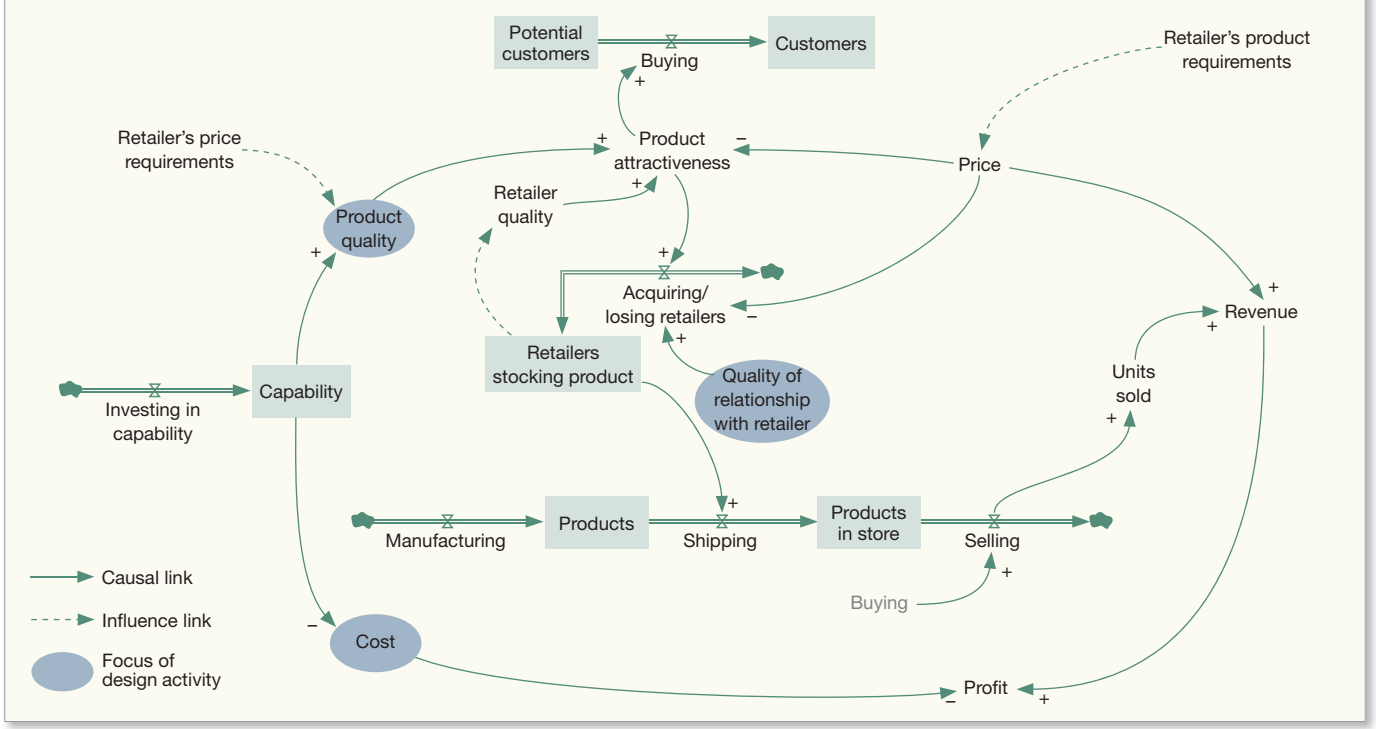
Figure 5 - Manufacturer of specified product



Specified product. The third model in the New Zealand furniture industry, shown in figure 5, is the "Manufacturer of Specified Product" model.

In this business model the key relationship for the manufacturer is with the specifier. This is often an architect who is specifying the products required for his/her customer. The specifier "owns" the client who is often oblivious of who is manufacturing their furniture. This is the case with both specifications for larger projects such as hospitals, rest homes, and apartments as we well as specifications for an individual house. A key point here is that it is a project-based contract. The manufacturer is producing product to meet contract requirements. At one extreme this is simply one of everything; each item being unique and specific to the customer. At the other it may be in production runs of around 200 if, for example, the project involves production of the furniture for a new hotel. In New Zealand, however, production runs of

Figure 4 - System Dynamics Representation of the Direct-to-Retailer Model



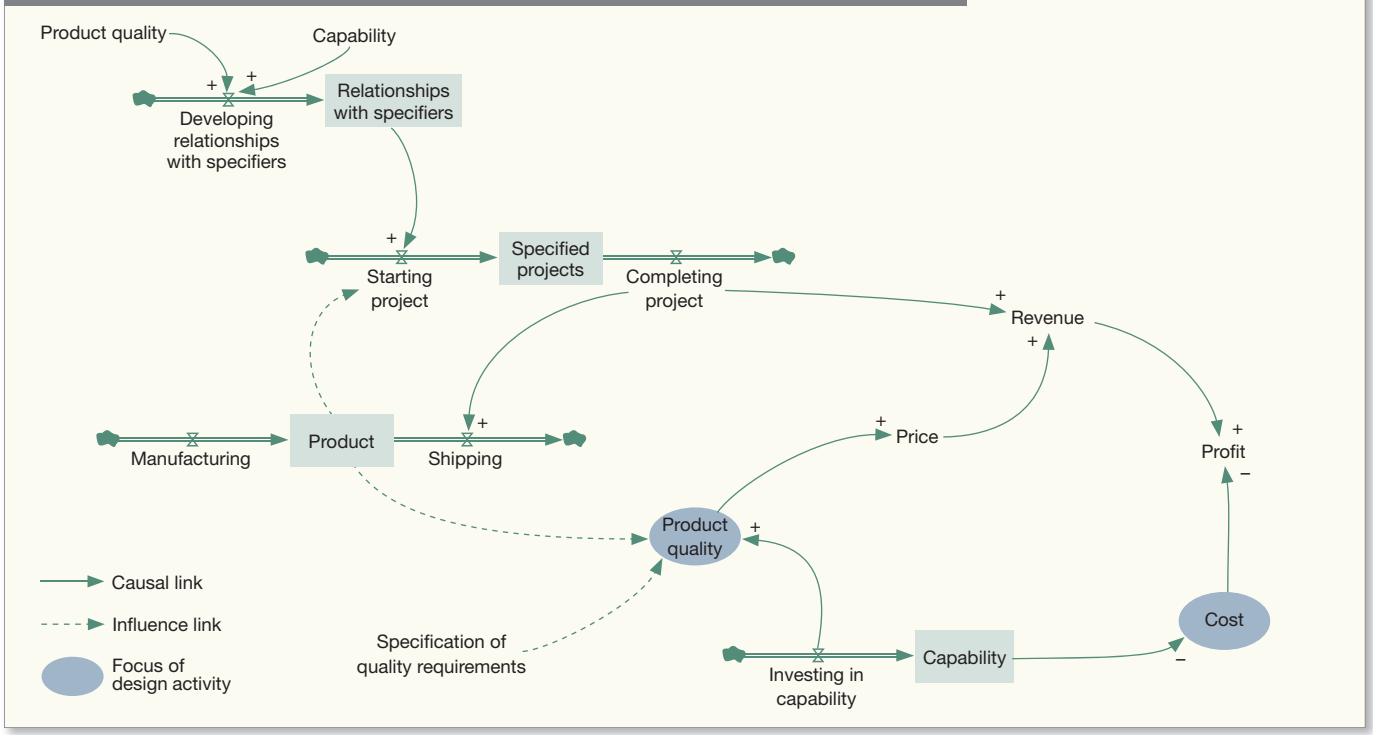
around 20 are most common. That is, they are small runs for a specific project rather than producing for inventory, as in the other models. The designer in this model also has a different relationship. They are contracted, and often employed by the specifier and look to the manufacturer for their capability to meet their design specifications. This is different than the earlier model where the manufacturer designer relationship is often about constraining the design options by price, current production capabilities and/or endeavours to maximise production output. In this case the manufacturer has to flex or stretch their production capabilities to meet the specification. As a result the skill level required by companies who operate this model often has to be higher and this needs to be taken into account for a full understanding of the dynamics of the business model.

A representation of this model using systems dynamics highlights its special project-based character (Figure 6). Most noticeable in the specified product model is the absence of the end-user as customer. This is because in this model the relationship with the specifier is all encompassing. It is through them that the customer's requirements are met and there is no business relationship between the manufacturer and the purchasing customer. The customer plays no real part in this business model other than through the specifier. Another key aspect here is the need for investment in manufacturing capability. This is not a business model driven by price, but one driven by the ability of the manufacturer to meet design specifications, which often include tight timeframes. The specifier is after a specific product to meet a requirement and therefore the designer can have a significant impact upon the price of that product. Product design is usually through staff contracted or employed by the specifier. The manufacturer simply produces to those design requirements. As a result manufacturing capability has to be higher and more flexible, and design of the manufacturing process itself becomes key, as well as influencing design-for-manufacturability in the relationship with the specifier. The manufacturer has to be able to meet the specifications and any changes to them during the course of the project. If the manufacturer does not have these capabilities then they will not get the project. Because of this the manufacturer has to develop and maintain a higher level of production quality and flexibility and has to have the ability to work closely with the design specifications.

WHO DESIGNS? WHO PROFITS?

With the push to integrate design into business there is an increasing need to be able to understand and describe business models in such a way that design and the designer can find an appropriate place to contribute. Without this understanding, design inputs become driven by the designer and the hope that he/she will be able to deliver a design that sells. This is a concern raised by Bruce and Bessant[17] who argue that when the task of design is simply seen as the task of design professionals it doesn't become integrated into the business. Instead it "...sets up the problem that other members in organizations see the task of design as belonging to this group of specialists and not relevant to them. In other words, design becomes "someone else's problem".[18]

Figure 6 - System Dynamics Representation of the Manufacturer of Specified Product Model



In each of the business models shown the possible impact of design varies and the nature of the design task is different. Making sure that the business owner and the designer have a common understanding of the business model is therefore an important foundation for any integration of design into the business. In this context the business model becomes, "...a vehicle for thinking and exploring ideas".[19] Models then are central to design and designers and the proposition in this paper is simply to extend the thinking to business models; models that show how the "whole" fits together to deliver the outcomes, in this case sustainable business profitability. Design, if it is to contribute to this outcome needs to understand the business model that delivers it and their role within it.

The retail manufacturer model is dominated by the retail relationship

PETER LANGE, *Campsite - boat and tent*

The "direct to customer model" is the simplest and the most flexible in terms of design input. The model is only really limited by production capability and distribution access. The designer has an intimate knowledge of both production capability and, as the business owns the distribution channel, an intimate knowledge of the customer. All aspects of the design are therefore under the control of the manufacturer and any design limits are those imposed by choice and capability.

The retail manufacturer model is dominated by the retail relationship. Case companies of this model operate with large retail chains who dominate the New Zealand retail furniture market. They are high volume businesses who take very few risks with product, resulting in a conservative and largely homogeneous product range. Design in this model has very limited opportunities to be innovative and/or adventurous. Design is largely limited to minor, incremental modifications to last year's product and/or copying successful designs by other New Zealand or overseas manufacturers. Far more important in this model is the ability to produce to a price point and the major design input is in reducing production costs. It is a low-cost model and manufacturers who are unable to produce to the retailer specified price go out of business.

It is true that some manufacturers produce product for independent retailers who are more interested in design quality. These stores however often push imported European designed product and have limited volumes compared to the large retail chains. Because of this, and the fact that the designs manufacturers produce for the large retail chains do not usually fit the requirements of the small independent retailer, this is limited to very small designer-led manufacturers who produce very small volumes.

In the specified product model, design and build quality are very important. However, the design elements are usually determined by the specifier. The manufacturer succeeds in this business not by design skill but by their production capability; being flexible enough to produce the design specifications to the required quality. The skill here is being able to work with designers and interpret their requirements in a way that allows their designs to be manufactured profitably. So, while manufacturers in this model usually do not have in house designers they need a high level of understanding of designers and design requirements.

The customer plays no real part in this business model other than through the specifier

In following the case companies over a four year period, the recognition of business model was a first step in re-focusing design activity, and innovating in areas other

than the traditional area of product design, to include re-thinking distribution, re-focusing on relationships and point of sale, and investing in better manufacturing capability. In each case, the investment in business-model specific design activities yielded significant, positive financial returns (ROI from 8-48% net annual yield). This is corroborated by the survey data contained in the annual PWC-EMA "Clever Companies" survey, which has linked targeted design and innovation investments to higher levels of growth and productivity across all manufacturing firms in their sample.

For the furniture industry in New Zealand to succeed, appropriately targeted design is required. To target design, both designers and managers need a foundational understanding of the business model. These insights - and the potential impact on business growth and profitability - are not limited to furniture manufacturers. New Zealand's key challenge in manufacturing is to leverage design to add value to primary and secondary production and grow successful and profitable businesses. Strategic advantage for manufacturers depends not just on design, but design for a particular industry niche and business model. Manufacturing depends on maintaining design differentiation, and innovation both in product and process. Understanding design dynamics in the small manufacturer is essential to maintaining competitiveness, and provides important insight into the potential of design and design management to transform small business. ■

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